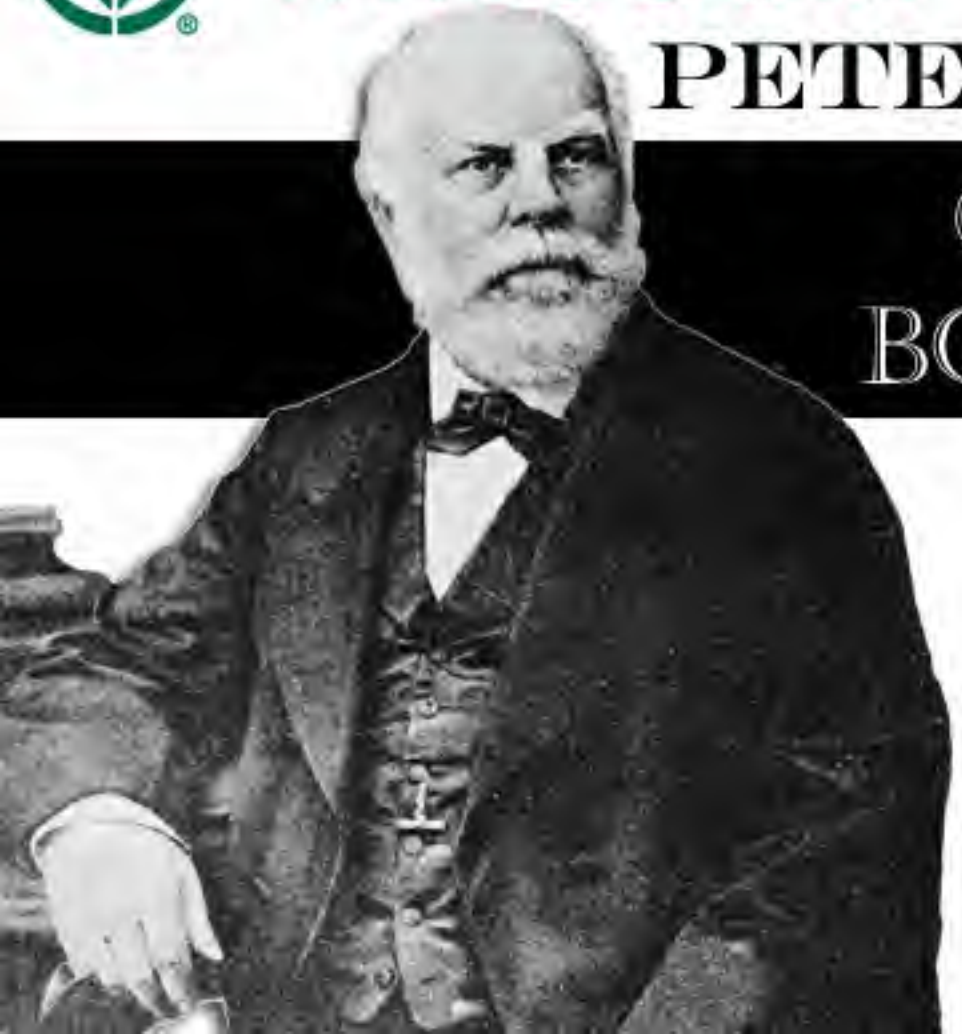
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GLORY.) Rather smooth; stem twining and creeping, slender; leaves heart-shaped, pointed, entire or angled-lobed, long-petioled; peduncles very short, 1–3-flowered; sepals oblong-lanceolate, acute, ciliate or hairy, half the length of the sharply 5-lobed (white) corolla; stigmas united; pod hairy, 2-celled. ① (Ipomœa, *L.* C. micránthus, *Riddell.*) — Woods and fields, Ohio (rare) and southward. Aug. — Corolla ½′ long.

4. **C. Pickeríngii,** Torr. (SLENDER-LEAVED MORNING-GLORY.) Stems prostrate, slender, branching, whitish-downy, very leafy; leaves all narrowly linear, obtuse, tapering to the base into a slight petiole; peduncles filiform, about the length of the leaves, mostly 1-flowered; bracts like the leaves, as long as the flower; sepals ovate, silky, half the length of the (small and white) bell-funnel-form corolla; style exserted, 2-lobed at the apex; pod by obliteration 1-celled. ↳ — Sandy pine barrens of N. Jersey (and N. Carolina). July. — Plant with the aspect of Evolvulus, the slender stems 2°–4° long: leaves 1′–2′ long, the lowest linear-spatulate; the others 1″ wide. Lower peduncles, or branchlets, mostly 3-flowered. Border of the expanded corolla ½′ wide. — Entirely distinct from C. aquaticus and C. tenellus, combined by Choisy under the name of Stylísma evolvulòides, and to which he has appended this plant as a narrow-leaved variety, although it does not accord with his generic character, having the styles united nearly to the top.

§ 3. PHARBÌTIS, Choisy. — *Stigmas mostly* 3, *united, capitate: pod* 3-*celled: the cells* 2-*seeded.*

5. **C. purpùreus,** L. (COMMON MORNING-GLORY.) Twining, hairy; leaves roundish-heart-shaped, entire, pointed; peduncles elongated, 3–5-flowered; pedicels clustered, thickened; sepals ovate-lanceolate, acute; corolla (1′–2′ long) funnel-form with a spreading entire border, purple, violet, or nearly white. ① — Commonly cultivated, and becoming spontaneous about gardens and dwellings. July – Sept. — Flowers opening at dawn, closing early in the forenoon.

C. (PHARBÌTIS) NIL, *L.*, a pale blue Morning-Glory with 3-lobed leaves, which is indigenous or spontaneous at the South, is sometimes cultivated, but not naturalized, in the Northern States.

C. (BATÀTAS) JALAPA, *L.*, the C. macrorhìzus, *Ell.*, is also wholly a Southern species.

C. BATÀTAS, L. (Batatas édulis, *Choisy*), is the cultivated SWEET POTATO.

QUÁMOCLIT COCCÍNEA, *Mœnch.* (Ipomœa, *L.*), with small scarlet or yellowish-tinged flowers, is beginning to be naturalized in Southern Ohio.

Q. VULGÀRIS, *Choisy* (Ipomœa Quamoclit, *L.*), remarkable for its delicate pinnated leaves and slender scarlet flowers, is well known in cultivation as the *Cypress-vine.*

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Gray Man. Bot. Engelmann ed. 1. 185

Suborder II. CUSCUTÍNEÆ. The Dodder Family.

3. CÚSCUTA, Tourn. Dodder.

Calyx 5- (rarely 4-) cleft, or of 5 sepals. Corolla globular-urn-shaped, bell-shaped, or somewhat tubular, the spreading border 5- (rarely 4-) cleft. Stamens attached to the tube of the corolla, furnished with a scale-like often fringed appendage at their base. Ovary 2-celled, 4-ovuled: styles distinct (or rarely united). Pod mostly 4-seeded. Embryo thread-shaped, spirally coiled in the rather fleshy albumen, entirely destitute of cotyledons! — Leafless herbs, chiefly annuals, yellowish or reddish in color, with thread-like stems, bearing a few minute scales in place of leaves, rising from the soil in germination, soon becoming entirely parasitic on the bark of herbs and shrubs over which they twine, and to which they adhere by means of papillæ developed on the surface in contact. Flowers small, cymose-clustered, mostly white. (Name of uncertain, supposed to be of Arabic, derivation.) — A new and complete monograph of this genus may soon be expected from Dr. Engelmann.

§ 1. *Stigmas elongated: pod opening regularly around near the base by circumcissile dehiscence, leaving the partition behind. (Natives of the Old World.)*

1. **C. Epilìnum,** Weihe. (Flax Dodder.) Stems very slender; flowers in small and dense scattered heads; corolla globular-cylindrical, scarcely exceeding the 5-parted calyx, left surrounding the base of the pod in fruit; scales small; styles at first upright, not longer than the ovary. — In Flax-fields, where it is sometimes very injurious: sparingly introduced with flax-seed into the Northern States. June.

§ 2. *Stigmas capitate: pods indehiscent, rarely bursting irregularly.*

* *Ovary depressed-globular, not pointed: pod thin and membranous, greenish or yellowish.*

2. **C. chlorocárpa,** Engelm. Low, orange-colored; flowers almost sessile, clustered; *corolla* mostly 4-cleft, *open-bell-shaped, the tube about the length of the acute lobes and calyx-teeth*, remaining persistent around the base of the depressed pod, the scales cut-fringed or cleft (rather small); stamens as long as the lobes. (C. Polygonòrum, *Engelm.*) — Low grounds, covering Polygona and other herbs, Ohio and westward.

3. **C. tenuiflòra,** Engelm. Much branched, twining high, pale-colored; flowers at length peduncled and in rather loose cymes;

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tube of the corolla cylindrical (ventricose after flowering), *twice the length of the obtuse spreading lobes* and of the ovate obtuse calyx-lobes, in fruit borne on the summit of the depressed pod; scales ovate, cut-fringed; stamens shorter than the lobes of the corolla. (C. Cephaláthi, *Engelm.*) — Swamps, common through the Western States, on Cephalanthus and various tall herbs.

* * *Ovary more or less pointed at the apex (with a stylopodium): pod brownish, of firmer texture.*

\+ *Flowers sparingly bracted: calyx* 4–5*-cleft.*

4. **C. umbròsa,** Beyrich (fide *Engelm.*). Flowers peduncled in umbel-like cymes; *tube of the* (mostly 4-cleft) *fleshy corolla cylindrical, as long as the ovate acutish and minutely crenate inflexed lobes*, and the acute keeled calyx-lobes; *scales minute and few-toothed*, appressed; *pod* depressed-globose, *covered with the remains of the corolla.* (C. Córyli, *Engelm.*) — Prairies and barrens, Western States. Allied to the last.

5. **C. Gronòvii,** Willd. Flowers peduncled, in close or open cymes; *corolla bell-shaped, the tube longer than the ovate and obtuse entire open lobes* and the ovate obtuse and somewhat keeled calyx-lobes; *scales large and converging, copiously fringed*, confluent at the base; the *remains of the corolla persistent at the base of the globose pod.* (Calyx and corolla more or less dotted with pellucid glands: these are wanting in C. Saurùri, *Engelm.*, which also has a more open corolla, more oblong lobes, &c.; but it is probably no more than a variety of the present species.) (C. vulgivàga, *Engelm.* C. Americàna, *Pursh*, &c. C. umbrosa, *Torr. Fl. N. Y.*) — Low grounds, extremely common, especially northward and eastward; chiefly on herbs. Aug., Sept. — C. ROSTRÀTA, *Shuttlew.*, a larger-flowered species with a pointed pod, common in the Alleghanies from Maryland southward, is probably to be found in Pennsylvania.

\+ \+ *Calyx of* 5 *separate broad sepals, imbricated beneath with several nearly similar bracts: remains of the corolla in fruit borne on the globose somewhat pointed pod.* (Lepidánche, *Engelm.*)

6. **C. compácta,** Juss. Flowers sessile, in dense clusters; *bracts* (4–5) *and sepals orbicular, concave, appressed*, slightly crenate, much shorter than the slender cylindrical tube of the corolla; stamens shorter than the linear-oblong spreading lobes of the corolla; scales pinnatifid-fringed. (C. coronàta, *Beyrich*, fide *Engelm.*) — Dry ground, on shrubs, &c., S. Penn. and southward.

7. **C. glomeràta,** Choisy. Flowers sessile, very densely clustered, forming knotty masses closely encircling the stem of the foster plant, much imbricated with scarious oblong *bracts with recurved-spreading tips; sepals nearly similar*, shorter than the oblong-cylindrical tube of the corolla; stamens nearly as long as the oblong-lanceolate spreading or reflexed lobes of the corolla; scales large, fring-

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4. NICÁNDRA, Adans. Apple of Peru.

Calyx 5-parted, 5-angled, the divisions arrow-shaped, enlarged and bladder-like in fruit, inclosing the 3 – 5-celled globular dry berry. Corolla open-bell-shaped, the plaited border nearly entire. Stamens converging. — An annual smooth herb, with ovate sinuate-toothed or angled leaves, and solitary pale blue flowers on axillary and terminal peduncles. (Named after the poet *Nicander* of Colophon.)

1. **N. physaloìdes,** Gærtn. — Sparingly naturalized near dwellings; a homely plant, native of Peru. August.

5. PHÝSALIS, L. Ground Cherry.

Calyx 5-cleft, reticulated and enlarging after flowering, at length much inflated and inclosing the 2-celled globular berry. Corolla spreading-bell-shaped, with a very short tube, marked with 5 concave spots at the base; the plaited border somewhat 5-lobed. Stamens 5, converging; anthers opening lengthwise. — Herbs (in this country), with the leaves often unequally in pairs, and the 1-flowered peduncles extra-axillary, as in the next genus. (Name from *φῦσα, a bladder*, alluding to the inflated calyx.)

1. **P. viscòsa,** L. Perennial, clammy-pubescent, low, very diffusely branched, at first erect; leaves ovate or lanceolate-ovate, heart-shaped or acute at the base, somewhat angled-toothed or entire; flowers nodding; corolla pale greenish-yellow with 5 brownish spots at the base; berry (yellowish) wholly inclosed in the much inflated calyx. — Dry fields and hill-sides, common. July, Aug. — Apparently very variable and embracing many nominal species.

2. **P. Philadélphica,** Lam. Annual, smoothish, erect; leaves obliquely ovate, pointed, angled; calyx in fruit open, scarcely inclosing the berry. — Dry river-banks, "New England to Virginia. July. — Flowers larger than in the preceding species, yellow, with brown stripes." *Pursh.*

6. SOLÀNUM, L. Nightshade.

Calyx chiefly 5-parted, spreading. Corolla mostly wheel-shaped and 5-cleft, plaited in the bud, with the margins of the lobes induplicate. Stamens exserted, converging around the style: filaments very short: anthers opening at the apex by 2 pores. Berry usually 2-celled. — Herbs, or shrubs in warm climates, the larger leaves often accompanied by a smaller lateral (rameal) one;

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the peduncles also mostly lateral and extra-axillary. (Name of unknown derivation.)

1. **S. Dulcamàra,** L. (BITTERSWEET.) *Stem somewhat shrubby, climbing,* nearly smooth; *leaves ovate-heart-shaped,* the upper *halbert-shaped, or with two ear-like lobes at the base;* flowers (purple) in small cymes which become lateral (opposite the leaves); berries oval, scarlet. — Moist banks and around dwellings, naturalized.

2. **S. nìgrum,** L. (COMMON NIGHTSHADE.) *Annual,* low, much branched and often spreading, rough on the angles; *leaves ovate, wavy-toothed; flowers* (very small, white) *in small and umbel-like lateral clusters,* drooping; berries globular, black. — Waste places, introduced? July – Aug. — A homely weed, said to be poisonous.

3. **S. Carolinénse,** L. (HORSE NETTLE.) *Perennial,* low (1° high); stem erect, *prickly;* leaves ovate-oblong, acute, sinuate-toothed or angled, *hoary-pubescent,* prickly along the midrib, as also the calyx; *flowers* (pale blue or white, large) *in simple loose racemes;* berries globular, orange-yellow. — Sandy soil, Connecticut to Ohio, southward. June – Aug.

S. TUBERÒSUM, L., the POTATO, and S. MELONGÈNA, L., the EGG-PLANT, are familiar cultivated representatives of the genus. — Other cultivated plants of the family are LYCOPÉRSICUM ESCULÉNTUM, Mill. (the TOMATO), and CÁPSICUM ÁNNUUM, L. (CAYENNE or RED PEPPER).

ÁTROPA BELLADÓNNA, L. (DEADLY NIGHTSHADE), a plant with purplish black, very poisonous berries, is rarely found spontaneous around gardens.

LÝCIUM BÁRBARUM, L. (BARBARY BOX-THORN, or MATRIMONY-VINE), a slightly thorny trailing shrubby vine, well known in cultivated grounds, is rarely found spontaneous.

ORDER 78. GENTIANÀCEÆ. (GENTIAN FAMILY.)

Smooth herbs, with a colorless bitter juice, mostly opposite and sessile entire leaves and no stipules, regular flowers with the stamens as many as the lobes of the corolla, which, in the true Gentian Family, *are convolute in the bud, a* 1*-celled ovary with* 2 *parietal placentæ; the fruit mostly a* 2*-valved* (*septicidal*) *many-seeded pod.* — Calyx persistent. Corolla mostly withering-persistent; the stamens inserted on its tube. Seeds anatropous, with a minute embryo in fleshy albumen.

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Synopsis.

Suborder I. GENTIANEÆ. THE TRUE GENTIAN FAMILY.

Lobes of the corolla twisted to the right in the bud, with the folds at the sinuses, when present, plaited. Leaves almost always opposite or whorled, entire, those of the stem sessile. Seed-coat cellular.

* Style distinct and slender, deciduous.

1. SABBATIA. Corolla wheel-shaped, 5 – 12-parted: anthers curved.
2. ERYTHRÆA. Corolla funnel-form, 4 – 5-cleft: anthers spiral.

* * Style (if any) and stigmas persistent: anthers straight.

+ Corolla without glands or spurs.

3. BARTONIA. Corolla 4-parted; no folds or fringes. Leaves minute.
4. GENTIANA. Corolla 5 – 4-lobed, with folds at the sinuses, or fringed on the throat or margins.

+ + Corolla with a glandular spot on each lobe.

5. HALENIA. Corolla 4 – 5-cleft, bell-shaped, 4 – 5-spurred.
6. FRASERA. Corolla 4-parted, wheel-shaped, regular; no spurs.

Suborder II. MENYANTHIDEÆ. THE BUCKBEAN FAM.

Lobes of the corolla valvate in the bud, with the edges turned inwards. Stem-leaves alternate, petioled. Seed-coat hard or bony.

7. MENYANTHES. Corolla bearded inside. Leaves 3-foliolate.
8. LIMNANTHEMUM. Corolla smooth above. Leaves simple, rounded.

Suborder III. OBOLARIEÆ. THE OBOLARIA FAMILY.

Lobes of the corolla imbricated in the bud. Leaves opposite, sessile. Ovules covering the whole inner surface of the ovary!

9. OBOLARIA. Calyx 2-leaved. Corolla 4-cleft.

Suborder I. GENTIÀNEÆ. THE TRUE GENTIAN FAMILY.

1. SABBÁTIA, Adans. AMERICAN CENTAURY.

Calyx 5 – 12-parted, the divisions slender. Corolla 5 – 12-parted, wheel-shaped. Stamens 5 – 12: anthers recurved. Style 2-parted, slender. — Biennials, with slender stems, and cymose-panicled handsome (white or rose-purple) flowers. (Dedicated to *Sabbati*, an early Italian botanist.)

* *Corolla* 5*-parted, or rarely* 6*-parted.*

+ *Branches opposite: flowers strictly cymose: peduncles short.*

1. **S. lanceolàta,** Torr. & Gr. *Stem simple, obscurely* 4*-angled*, bearing a flat-topped cyme; *leaves varying from ovate to lanceolate*, 3-nerved, acute, or the lower obtuse; calyx-lobes setaceous-

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linear, more than half the length of the white corolla. (S. corymbòsa, *Baldw.*) — Wet pine barrens, N. Jersey and southward. June–August.

2. **S. angulàris,** Pursh. *Stem square and* 4*-angled*, stiff, erect, *much branched above*, the branches many-flowered; *leaves ovate-heart-shaped, clasping;* calyx-lobes lanceolate-linear, nearly half the length of the rose-purple (rarely white) corolla. — Dry river-banks, S. New York to Michigan. July. — Stem 1°–2° high, bushy. Corolla showy, with a yellowish-green 5-rayed star in the centre.

+ + *Loosely panicled-branched; the branches alternate or forked: peduncles slender,* 1*-flowered.*

3. **S. stellàris,** Pursh. Stem weak, nearly round; *leaves oblong or ovate-lanceolate, the uppermost linear; calyx-lobes very narrow, shorter than the corolla*, which is bright purple-rose-color, with a yellow star-like eye edged with crimson. — Brackish meadows, Plymouth, Massachusetts, to New Jersey and southward. July, Aug. — Flowers smaller than in No. 2.

4. **S. grácilis,** Salisb. Stem, branches, and peduncles *very slender, diffuse; leaves linear*, or the lowest rather oblong, the uppermost thread-form; *calyx-lobes setaceous, about the length of the corolla*, which is nearly as in No. 3, but with a less bright eye. — Salt-marshes, New Jersey and southward.

* * *Corolla* 7–12 *parted.*

5. **S. chloroìdes,** Pursh. Stem nearly round; loosely panicled above; the peduncles slender, 1-flowered; leaves oblong-lanceolate; calyx-lobes linear, half the length of the deep rose-colored (rarely white) corolla. — Borders of brackish ponds, Plymouth, Massachusetts, to New Jersey and southward. July–Sept. — Stem 1°–2° high, slender; the very handsome (9–11-parted) flowers 1½′–2′ broad.

S. CALYCÒSA, Pursh, is not known in the Northern States.

2. ERYTHRÆA, Pers. CENTAURY.

Calyx 4–5-parted, the divisions slender. Corolla funnel-form or salver-form, with a slender tube and a 4–5-parted limb, which in withering twists on the pod. Anthers exserted, erect, twisting spirally. Style slender, single: stigma capitate or 2-lipped. — Low and small branching annuals, chiefly with rose-purple or reddish flowers; whence the name, from *ἐρυθρός, red.* (All our Northern species were doubtless introduced from Europe, and occur only in a few localities.)

1. **E. Centaùrium,** Pers. (CENTAURY.) Stem upright, *corymbosely branched* above; leaves oblong or elliptical, acutish; the

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uppermost linear; *cymes clustered, flat-topped, the flowers all nearly sessile;* tube of the (purple-rose-colored) corolla less than twice the length of the oval lobes. — Oswego, New York, naturalized near the old fort. July. — Plant 6′ – 12′ high : corolla 3″ – 4″ long.

2. **E. ramosíssima,** Pers., var. PULCHÉLLA, Griseb. Low (2′ – 6′ high); *stem many times forked above and forming a diffuse cyme;* leaves ovate-oblong or oval; *flowers all on short pedicels;* tube of the (pink-purple) corolla thrice the length of the elliptical-oblong lobes. (E. Muhlenbérgii, *Griseb.*, as to Penn. plant. Éxacum pulchellum, *Pursh.*) — Wet or shady places, Flushing, Long Island, Penn. and southward : certainly introduced, rare. — Flowers smaller than in No. 1.

3. **E. spicàta,** Pers. Stem strictly upright; the *flowers sessile and spiked along one side of the simple or rarely forked branches;* leaves oval and oblong, rounded at the base, acutish; tube of the (rose-colored or whitish) corolla scarcely longer than the calyx, the lobes oblong. (E. Pickeríngii, *Oakes.*) — Sandy shore, Nantucket, *Oakes.* — Plant 6′ – 10′ high, remarkable for the spike-like arrangement of the flowers.

3. BARTÒNIA, Muhl. (CENTAURÉLLA, *Michx.*)

Calyx 4-parted. Corolla deeply 4-cleft, destitute of glands, fringes, or folds. Stamens short. Pod oblong, pointed with a large persistent at length 2-lobed stigma. Seeds minute. — Small annuals, or biennials, with thread-like stems and little awl-shaped greenish scales in place of leaves. Flowers small, yellowish-white, peduncled. (Dedicated, in the year 1801, to the late *Prof. Barton*, of Philadelphia.)

1. **B. tenélla,** Muhl. Stems (3′ – 10′ high), branched above; the branches or peduncles mostly opposite, 1 – 3-flowered; lobes of the corolla oblong, acutish; anthers roundish; style none. — Open woods, common. Aug. — Petals rather longer than the calyx, or sometimes twice as long. — Centaurélla Mosèri, *Griseb.*, is only a variety with the scales and peduncles mostly alternate, and the petals acute.

4. GENTIÀNA, L. GENTIAN.

Calyx 4 – 5-cleft. Corolla 4 – 5-lobed, regular, usually with intermediate plaited folds which bear appendages at the sinuses. Style short or none : stigmas 2, persistent. Pod oblong, 2-valved, many-seeded. — Flowers solitary or cymose, showy. (Name from *Gentius*, king of Illyria, who used some species medicinally.)

§ 1. AMARELLOÌDES, Torr. & Gr. — *Corolla tubular funnel-form, with-*

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out crown or plaited folds, the lobes naked: anthers separate, versatile: pod stalked: seeds wingless: annuals.

1. **G. quinquefl̀ora,** Lam. (FIVE-FLOWERED GENTIAN.) Stem rather slender, branching (1° high); leaves ovate-lanceolate from a partly clasping and heart-shaped base, 3–7-nerved, tipped with a minute point; branches racemed or panicled, about 5-flowered at the summit; lobes of the small 5-cleft calyx awl-shaped-linear; lobes of the pale blue corolla triangular-ovate, bristle-pointed; one fourth the length of the slender obconical tube. — Var. OCCIDENTÀLIS has linear-lanceolate calyx-lobes which are more leaf-like, and about half the length of the corolla. — Dry hilly woods, Vermont to Penn., and the var. through the Western States. Aug., Sept. — Corolla light purplish-blue, nearly 1′ long, in the variety proportionally shorter.

§ 2. CROSSOPÉTALUM, Frœl. — *Corolla funnel-form, gland-bearing between the bases of the filaments, without crown or plaited folds, the lobes fringed or toothed on the margins: anthers separate and versatile: pod somewhat stalked: seeds wingless, clothed with little scales: annuals or biennials.*

2. **G. crinìta,** Frœl. (FRINGED GENTIAN.) Flowers solitary on long peduncles terminating the stem or simple branches; *leaves lanceolate or ovate-lanceolate from a partly heart-shaped or rounded base;* lobes of the 4-cleft calyx unequal, ovate and lanceolate, as long as the bell-shaped tube of the sky-blue corolla, the *lobes* of which are *wedge-obovate*, and *strongly fringed around the summit; ovary lanceolate.* — Low grounds, N. England to Michigan, rather common. Sept. —Plant 1°–2° high: the showy corolla 2′ long.

3. **G. detónsa,** Fries. (SMALLER FRINGED GENTIAN.) Stem simple, or with slender branches, terminated by solitary flowers on very long peduncles; *leaves linear or lanceolate-linear;* lobes of the 4- (rarely 5-) cleft calyx unequal, ovate or triangular and lanceolate, pointed; *lobes of the* sky-blue *corolla spatulate-oblong*, with ciliate-fringed margins, *the fringe shorter or nearly obsolete at the summit; ovary elliptical or obovate.* — Moist grounds, Niagara Falls to Wisconsin (*Lapham*), and northward. Sept. — Resembles the last.

§ 3. PNEUMONÁNTHE, Necker. — *Corolla bell-shaped or obconical, 5-lobed, with plaited folds which project into appendages in the sinuses: anthers erect, often converging or cohering with each other: pod finally stalked: seeds commonly winged: perennials.*

* *Flowers nearly sessile, clustered, rarely solitary, 2-bracteolate.*

4. **G. Pneumonánthe,** L. (MARSH GENTIAN.) Stem slender, erect; flowers terminal and axillary, sometimes solitary; *leaves linear, obtuse, nearly smooth;* calyx-lobes linear, about the length of the tube and half the length of the tube of the corolla; lobes of the club-shaped-funnel-form open (deep blue) corolla ovate, com-

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monly mucronate; *appendages short, triangular and entire;* anthers united; seeds narrowly winged. (G. Saponària, var. lineàris, *Griseb.* partly.) — Swamps near Portland, Maine: mountains of N. New York, and northward. Aug.

5. **G. Saponària,** L. (Soapwort Gentian.) Stem erect or ascending, often roughish above; the flowers clustered at the summit and more or less so in the axils; *leaves ovate-lanceolate, oblong, or lanceolate-obovate, with rough margins,* narrowed at the base; calyx-lobes linear or spatulate, acute, equalling or exceeding the tube, half the length of the corolla; *lobes of the club-bell-shaped blue corolla roundish-ovate, mostly obtuse, erect or converging, or sometimes expanding, more or less longer than the conspicuous 2-cleft and minutely toothed appendages;* anthers united; *seeds acute, narrowly winged.* (G. Catesbæi, *Walt.*) — Var. 1. Frœlichii, *Torr. & Gr.* Slender and wand-like, smooth; leaves linear, elongated (3′ long, 4″ wide), acutish; appendages of the corolla less cleft. (G. lineàris, *Frœl.* G. rubricaùlis, *Schwein.*) — Var. 2. pubérula, *Torr. & Gr.* Rigid, roughish with a minute pubescence; leaves varying from oblong-lanceolate to narrowly-linear, usually short, often broader next the base; corolla open; anthers soon separating; lobes of the corolla acutish, fully twice the length of the appendages. (G. puberula, *Michx.*) — Woods, S. New York (*Herb. Schwein.*) and New Jersey, rare; common southward: the var. 1 in mountain bogs and glades from Penn. southward: var. 2 in dry barrens and prairies, Ohio and westward. Sept. — A variable species; the primary form resembling G. Andrewsii, from which the manifest corolla-lobes distinguish it; the var. 1 too near No. 4; while the var. 2, on account of its rigid foliage, roughness, and open corolla larger in proportion, ordinarily appears like a very distinct species.

6. **G. ochroleùca,** Frœl. (Yellowish-White Gentian.) Stems ascending, mostly smooth; the flowers in a dense terminal cluster and often also in axillary clusters; *leaves obovate-oblong,* the lowest broadly obovate and obtuse, the uppermost somewhat lanceolate, *all narrowed at the base; calyx-lobes linear,* unequal, much longer than its tube, *rather shorter than the greenish-white open corolla,* which is painted inside with green veins and lilac-purple stripes; its lobes ovate, very much exceeding the small and sparingly toothed oblique appendages; anthers separate; *pod included* in the persistent corolla; *seeds entirely wingless!* — Dry grounds, S. Penn. (rare), and common through the middle and low country of the Southern States. Sept., Oct. — Very different from the next, which Grisebach confounded with it.

7. **G. álba,** Muhl. Cat.! (Whitish Gentian.) Stems upright, stout, very smooth; flowers closely sessile and much crowded in a dense terminal cluster, and sometimes also clustered in the upper

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axils; *leaves ovate-lanceolate from a heart-shaped closely clasping base*, gradually tapering to a point; *calyx-lobes ovate, shorter than the top-shaped tube, and many times shorter than the tube of the corolla*, reflexed-spreading; *corolla white more or less tinged with greenish or yellowish, inflated-club-shaped, at length open, its short and broad ovate lobes nearly twice the length of the toothed appendages;* anthers at first united; *pod nearly included; seeds broadly winged.* (G. flávida, *Gray, in Sill. Jour.* (*n. ser.*) 1. *p.* 80. G. ochroleuca, *Sims., Darlingt., Griseb.* in part, &c.) — Glades and low grounds, S. W. New York and Penn. to Wisconsin. Aug. — Although the name given by Muhlenberg (which I have ascertained to belong here) is not the most appropriate, and was not published with a character, yet I revive it for this truly distinct but greatly misunderstood species, which is nearest to No. 8 in the foliage, calyx, and seeds, while the corolla is more like No. 5, but with the color of No. 6.

8. **G. Andréwsii,** Griseb. (Closed Gentian.) Stems upright, smooth; flowers closely sessile in terminal and upper axillary clusters; *leaves ovate-lanceolate and lanceolate from a narrower base*, gradually pointed, rough-margined; *calyx-lobes ovate or oblong*, recurved, shorter than the top-shaped tube, and *much shorter than the inflated club-shaped blue corolla, which is closed at the mouth, with the proper lobes obliterated*, the apparent lobes consisting of the broad fringe-toothed and notched appendages; anthers united; *pod finally protruded beyond the persistent corolla; seeds broadly winged.* (G. Saponària, *Frœl., &c.*, not of *L.*) — Moist rich soil, common from New England to Wisconsin. Sept. — Corolla 1′ or more long, blue fading to purplish, striped inside, the folds whitish, the orifice never expanding.

* * *Flower solitary and terminal, peduncled.*

9. **G. angustifòlia,** Michx. (Narrow-leaved Gentian.) Stems slender and ascending (6′ – 15′ high), simple; leaves linear or the lower oblanceolate, rigid; corolla funnel-form, azure-blue (2′ long), about twice the length of the thread-like calyx-lobes, its ovate spreading lobes twice the length of the cut-toothed appendages; the tube striped with yellowish. — Moist pine barrens, New Jersey and southward. Sept. – Nov.

5. HALÈNIA, Borkh. Spurred Gentian.

Calyx 4 – 5-parted. Corolla short bell-shaped, 4 – 5-cleft, without folds or fringe, prolonged at the base underneath the erect lobes into spurs, which are glandular in the bottom. Stigmas 2, sessile, persistent on the oblong flattish pod. Seeds rather numerous, oblong. — Small and upright herbs, with yellowish or

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purplish panicled-cymose small flowers. (Name of unknown meaning.)

1. **H. defléxa,** Griseb. Biennial, leafy (1° high), simple or branched above; leaves 3–5-nerved, the lowest oblong-spatulate and petioled; the others oblong-lanceolate, acute, nearly sessile; spurs cylindrical, obtuse, curved and descending, half the length of the acutely 4-lobed corolla. (Swértia corniculàta, *L.* partly.) — Damp woods, in the northern parts of Maine, New York, and Michigan. July, August.

6. FRASÈRA, Walt. American Columbo.

Calyx deeply 4-parted. Corolla deeply 4-parted, wheel-shaped, each division with a glandular and fringed pit on the upper side. Filaments awl-shaped, usually somewhat monadelphous at the base: anthers oblong, versatile. Style persistent: stigma 2-lobed. Pod oval, flattened, 4–14-seeded. Seeds large and flat, wing-margined. — Tall and showy herbs, with upright and mostly simple stems, bearing whorled leaves and numerous peduncled flowers in open cymes, which are disposed in an ample elongated panicle. (Dedicated to *John Fraser*, a well-known and indefatigable collector in this country towards the close of the last century.)

1. **F. Caroliniénsis,** Walt. Smooth, tall (3°–8° high); leaves mostly in fours, lance-oblong, the lowest spatulate (1° long), veiny; panicle pyramidal, loosely-flowered; divisions of the corolla oblong, mucronate, longer than the narrowly lanceolate calyx-lobes, the large and round gland on their middle bordered by a strong and even fringe, pod much flattened parallel with the flat valves. ♃ ②? — Rich dry soil, S. W. New York to Wisconsin and southward. July. — Root very thick and bitter. Corolla 1′ broad, light greenish-yellow with brown-purple dots.

Suborder II. MENYANTHIDÈÆ. The Buckbean Fam.

7. MENYÁNTHES, Tourn. Buckbean.

Calyx 5-parted. Corolla short funnel-form, 5-parted, deciduous, the whole upper surface white-bearded. Style slender, persistent: stigma 2-lobed. Pod bursting somewhat irregularly, many-seeded. Seed-coat hard, smooth, and shining. — A perennial herb, with a thickish creeping rootstock, sheathed by the membranous bases of the long petioles, which bear 3 oval or oblong leaflets at the summit; the flowers racemed on the naked scape,

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white or slightly reddish. (The ancient Theophrastian name, probably from *μήν*, *month*, and *ἄνθος*, *a flower*, some say from its flowering for about that time.)

1. **M. trifoliàta,** L. — Bogs, very common northward. May, June. — Scape 1° high: flowers handsome.

8. LIMNÁNTHEMUM, Gmelin. Floating Heart.

Calyx 5-parted. Corolla almost wheel-shaped, 5-parted, the divisions fringed or bearded at the base or margins only, bearing a glandular appendage near the base. Style short or none: stigma 2-lobed, persistent. Pod few – many-seeded, at length bursting irregularly. Seed-coat hard. — Perennial aquatics, with rounded floating leaves on very long petioles, which, in most species, bear near their summit the umbel of flowers with a cluster of short and spur-like roots, sometimes shooting forth new leaves and so spreading by a sort of proliferous stolons. (Name compounded of *λίμνη*, *a marsh* or *pool*, and *ἄνθεμον*, *a blossom*, from the situations where they grow.)

1. **L. lacunòsum,** Griseb. (partly). Leaves round-heart-shaped, thickish; lobes of the (white) corolla broadly oval, naked, except the crest-like yellowish gland at their base, twice the length of the lanceolate calyx-lobes; style none; seeds perfectly smooth and even. (Villársia lacunosa, *Vent.* V. cordàta, *Ell.*) — Shallow ponds, from Maine and E. New York to New Jersey and southward. June – Sept. — Leaves 1′ – 2′ broad, entire, on petioles 4′ – 15′ long, according to the depth of the water. — *L. trachyspérmum* of the South has roughened seeds, as its name denotes, and is entirely distinct.

Suborder III. OBOLARIÈÆ. The Obolaria Family.

9. OBOLÀRIA, L. Obolaria.

Calyx of 2 spatulate spreading sepals, resembling the leaves. Corolla tubular-bell-shaped, withering-persistent, 4-cleft; the lobes oval-oblong, or with age spatulate, imbricated in the bud. Stamens inserted at the sinuses of the corolla, short. Style short, persistent: stigma 2-lipped. Pod ovoid, 1-celled, but by intrusion of the lining half 2 – 4-celled; the seeds covering the whole face of the walls: seed-coat cellular. — A low and very smooth purplish-green perennial, with a simple or sparingly branched stem, opposite wedge-obovate leaves; the dull white or purplish

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flowers solitary or in clusters of three, terminal and axillary, nearly sessile. (Name from ὀβολός, a small Greek coin, to which, however, the leaves of this plant certainly bear no manifest resemblance.)

1. **O. Virgínica,** L. (*Gray, Chlor. Bor.-Am., t.* 3.) — Rich soil, in woods, from New Jersey to Ohio and southward, rare, often nearly concealed by dead leaves. April, May. — Plant 4′ – 8′ high.

Order 79. APOCYNÀCEÆ. (Dogbane Family.)

Plants with milky acrid juice, entire chiefly opposite leaves without stipules, regular 5*-merous and* 5*-androus flowers, with the* 5 *lobes of the corolla convolute and twisted in the bud, the filaments distinct, inserted on the corolla, and the pollen granular,* the calyx entirely free from the two ovaries, which are usually quite distinct, though their styles are coalescent. — Seeds amphitropous or anatropous, with a large straight embryo in sparing albumen. — Chiefly tropical, represented in the Northern States only by the genus

1. APÓCYNUM, Tourn. Dogbane. Indian Hemp.

Calyx 5-parted, the lobes acute. Corolla bell-shaped, 5-cleft, bearing 5 triangular appendages in the throat opposite the lobes. Stamens inserted on the very base of the corolla, shorter than the arrow-shaped anthers, which converge around the ovoid obscurely 2-lobed stigma, and are slightly adherent to it by their inner face. Fruit of 2 long and slender follicles. Seeds provided with a long tuft of silky down at the apex (*coma*). — Perennial herbs, not climbing, with mucronate-pointed leaves, a tough fibrous bark, and small and pale cymose flowers on short pedicels. (An ancient Greek name, composed of *ἀπό*, *from*, and *κύων*, *a dog*, to which the plant was thought to be poisonous.)

1. **A. androsæmifòlium,** L. (Spreading Dogbane.) Smooth, branched above, the *branches diverging; forking; leaves ovate, distinctly petioled; cymes loose, spreading,* mostly longer than the leaves; *corolla* (pale rose-color) *open-bell-shaped, with revolute lobes, the tube much longer than the ovate pointed divisions of the calyx.* — Varies, also, with the leaves downy underneath. — Borders of

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copses, common. June, July. — Corolla ½′ broad. Pods 3′ – 4′ long, pendent.

2. **A. cannabìnum,** L. (INDIAN HEMP.) Stem and branches *upright or ascending*, terminated by *erect and close many-flowered cymes*, which are usually shorter than the leaves; *corolla* (greenish-white) *with nearly erect lobes, the tube not longer than the lanceolate divisions of the calyx.* — Var. 1. GLABÉRRIMUM, *DC.* Entirely smooth; leaves oblong or oblong-lanceolate, on short but manifest petioles, obtuse or rounded, or the upper acute at both ends. — Var. 2. PUBÉSCENS, *DC.* Leaves oblong, oval, or ovate, downy underneath or on both sides, as well as the cymes. (A. pubescens, *R. Br.*) — Var. 3. HYPERICIFÒLIUM. Leaves more or less heart-shaped at the base and on very short petioles, commonly smooth. (A. hypericifolium, *Ait.*) — Copses and river-banks, common. July, Aug. — Plant 2° – 3° high, much more upright than the last, the flowers scarcely half the size: the different varieties run into one another greatly.

ORDER 80. ASCLEPIADÀCEÆ. (MILKWEED FAM.)

Plants with milky juice and opposite or whorled (rarely scattered) entire leaves, follicular pods, seeds, &c., just as in the last family; from which they differ in the commonly valvate corolla, and singular connection of the anthers with the stigma, the cohesion of the pollen into wax-like masses, &c., as explained under the typical genus.

Synopsis.

* Filaments monadelphous: anthers 2-celled, vertical: pollen-masses 10, suspended in pairs from 5 glands of the stigma.

1. ASCLEPIAS. Calyx and corolla reflexed, deeply 5-parted. Crown of 5 hooded lobes (nectaries, *L.*) with an incurved horn rising from the base of each.
2. ACERATES. Calyx and corolla reflexed-spreading. Lobes of the crown concave, hornless.
3. ENSLENIA. Calyx and corolla erect. Lobes of the crown flat, hornless, abruptly tipped with a 2-parted awn.

* * Filaments monadelphous: anthers 2-celled, opening transversely: pollen-masses 10, horizontal.

4. GONOLOBUS. Corolla convolute in the bud. Crown a small wavy-lobed ring.

* * * Filaments distinct: pollen-masses granular.

5. PERIPLOCA. Corolla flat. Crown 5-cleft, 5-awned. Anthers bearded.

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1. ASCLÈPIAS, L. MILKWEED. SILKWEED.

Calyx 5-parted, persistent, the divisions small, spreading. Corolla deeply 5-parted; the divisions valvate in the bud, reflexed, deciduous. *Crown* of 5 hooded lobes (nectaries, *L.*) seated on the tube of stamens, each containing a horn-like incurved process. Stamens 5, inserted on the base of the corolla: filaments united in a tube (*gynostegium*) which incloses the pistil: anthers adherent to the stigma, with 2 vertical cells opening lengthwise, tipped with a membranaceous appendage, each cell containing a flattened pear-shaped and waxy pollen-mass; the two contiguous pollen-masses of adjacent anthers forming pairs which hang by their slender summits from the descending processes of 5 cloven glands that grow on the angles of the stigma (usually extricated from the cells by the agency of insects, and directing copious pollen-tubes into the point where the stigma joins the apex of the styles). Ovaries 2, tapering into very short styles: a large depressed 5-angled fleshy stigma common to the two. Follicles 2, one of them often abortive, soft, ovate or lanceolate. Seeds anatropous, flat, margined, downwardly imbricated all over the large placenta which separates from the suture at maturity, furnished with a long tuft of silky hairs (*coma*) at the hilum. Embryo large, with foliaceous cotyledons in thin albumen. — Perennial upright herbs, with thick and deep roots: peduncles terminal or mostly lateral and between the petioles, bearing simple many-flowered umbels. Leaves usually transversely veiny. (The Greek name of *Æsculapius*, to whom the genus is dedicated.)

* *Pods clothed with soft spinous projections.*

1. **A. Cornùti,** Decaisne. (COMMON MILKWEED or SILKWEED.) Stem large and stout, somewhat branched; *leaves ovate-elliptical*, with a slight point, *spreading*, *contracted at the base into a short but distinct petiole*, *minutely velvety-downy underneath* as well as the peduncles and branches; divisions of the corolla ovate (greenish-purple), about one fourth the length of the very numerous pedicels; *hoods* of the crown *ovate*, *obtuse*, *with a lobe or tooth on each side of the short and stout claw-like horn; pods ovate*, *covered with weak spines and woolly*. (A. Syrìaca, *L.*, but the plant is a native of this country only.) — Rich soil, fields, &c., common. July. — Plant 3° – 4° high; leaves 4′ – 8′ long, pale.

2. **A. Sullivántii,** Engelm. Mss. (SMOOTH MILKWEED.) *Very smooth throughout*, tall; *leaves ovate-oblong from a heart-shaped*

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sessile base, erect; hoods of the crown *obovate, entire, obtusely 2-eared at the base* on the outside, with a slender but obtuse claw-like horn; *pods ovate-lanceolate, with small and scattered warty spines chiefly on the beak.* — Near Columbus, Ohio, *Sullivant.* (Also Missouri, *Engelmann.*) July. — Resembles No. 1 in appearance, petals, &c.; the hoods larger, and exceeding the anthers by one half.

* * *Pods not warty-roughened or prickly.*

+ *Leaves all opposite, or the middle ones sometimes in fours.*

++ *Stems simple or nearly so.*

3. **A. phytolaccoìdes,** Pursh. (Poke-Milkweed.) Stem tall, smooth; *leaves broadly ovate, or the upper oval-lanceolate and pointed at both ends, short-petioled,* smooth or slightly downy underneath; *pedicels loose and nodding, numerous, elongated* and slender, nearly as long as the peduncle, *many times longer than the ovate-oblong divisions of the* (*greenish*) *corolla;* hoods of the crown (white) truncate, the margins 2-toothed at the summit, *the horn with a long projecting awl-shaped point;* pods minutely downy. — Moist copses, not rare. June. — Stem 3° – 5° high, above marked with 2 opposite lines of minute pubescence, as in most of the following: peduncles 1′ – 3′ long. Leaves 5′ – 8′ long.

4. **A. purpuráscens,** L. (Purple Milkweed.) Stem rather slender (2° – 3° high); *leaves elliptical or ovate-oblong,* the lower mucronate, the upper taper-pointed, *minutely velvety-downy underneath,* smooth above, *contracted at the base into a short petiole; pedicels* shorter than the mostly terminal peduncle, *about twice the length of the dark purple lanceolate-ovate divisions of the corolla;* hoods of the crown oblong, abruptly narrowed above; *the horn broadly scythe-shaped, with a narrow and abruptly inflexed horizontal point;* pods smooth. (A. amœ̀na, *L., Michx.*) — Border of copses, N. England to Michigan, not common eastward. July. — Flowers as large as in No. 1: peduncle and pedicels downy along one side.

5. **A. variegàta,** L. (Variegated Milkweed.) *Nearly smooth* (1° – 2° high); *leaves ovate, oval, or obovate,* somewhat wavy, mucronate, *contracted into short petioles; pedicels* (*numerous and crowded*) *and peduncle short, downy;* divisions of the *corolla ovate* (*white*); hoods of the crown orbicular, entire, the horn semilunar with a horizontal point; pods slightly downy. (A. nívea, *L.*, in part. A. hýbrida, *Michx.*) — Dry woods, S. New York to Penn., Ohio, and southward. July. — Remarkable for its very compact umbels of nearly white flowers, often purple in the centre. Leaves 4 – 5 pairs, the middle ones sometimes whorled; veins often purple. Peduncles 1 – 3, usually ½′ long.

6. **A. quadrifòlia,** Jacq. (Four-leaved Milkweed.) Nearly smooth (10′ – 18′ high), slender; *leaves ovate or sometimes ovate-lanceolate, petioled, usually taper-pointed, the middle ones in whorls of*

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four ; pedicels capillary ; divisions of the corolla oblong (pale pink) ; hoods of the white crown elliptical-ovate, the incurved horn short and thick ; pods linear-lanceolate, smooth. — Dry woods and hills, common. June. — Leaves 2′ - 4′ long, variable on the same plant, sometimes all opposite, rarely with two whorls. Umbels 2–5 ; peduncles 1′ – 1½′ long : the handsome flowers barely half as large as in Nos. 5 and 1.

7. **A. obtusifòlia,** Michx. (WAVY-LEAVED MILKWEED.) Smooth and glaucous ; *stem* simple (2° – 3° high), *bearing a single long-peduncled terminal umbel ; leaves oblong or ovate-elliptical, very obtuse* but mucronate, *sessile and partly clasping by a heart-shaped base, the margins very wavy ;* pedicels very numerous, elongated ; divisions of the corolla oblong (greenish-purple) ; hoods of the crown truncate and somewhat toothed at the summit, shorter than the slender awl-pointed horn ; pods smoothish. — Sandy woods and fields, not rare, especially southeastward. July. — Leaves 3′ - 5′ long. Flowers larger than in No. 1.

8. **A. rùbra,** L. (RED-FLOWERED MILKWEED.) Smooth, slender (1° – 2° high), bearing 1 – 3 *few-flowered umbels at the naked summit of the stem ; leaves ovate-lanceolate or oblong-ovate, tapering to a very sharp point, rounded or slightly heart-shaped at the base, very short-petioled ;* divisions of the corolla lanceolate, acute (reddish-purple) ; hoods of the crown oblong, acutish (purple tinged with orange), with an awl-shaped and slightly incurved short horn ; pods smooth. (A. laurifòlia, *Michx.* A. acuminàta, *Pursh.*) — Low grounds, New Jersey, Penn., and southward, rare. July. — Leaves 2′ – 4′ long, rough-ciliate. Umbel mostly solitary on a peduncle 2′ – 3′ long.

9. **A. paupércula,** Michx. (SLENDER LONG-LEAVED MILKWEED.) Very smooth ; *stem wand-like*, slender (2° – 3° high), *bearing* 1 – *several few-flowered umbels at the summit of a naked* and usually elongated *terminal peduncle* (rarely with one or two lateral ones) ; *leaves linear, much elongated*, slightly petioled ; divisions of the (purple) corolla linear-oblong, half the length of the pedicels ; hoods of the crown (orange-yellow) spatulate-oblong, much longer than the awl-shaped incurved horn. — Wet pine barrens, New Jersey, rare, and southward. July, Aug. — Leaves 5′ – 10′ long, 1″ – 6″ broad ; the few but showy flowers larger than in No. 1.

++++ *Stem paniculately branching.*

10. **A. incarnàta,** L. (SWAMP MILKWEED.) Smooth, or nearly so, the stem with two downy lines above and on the branches and peduncles ; leaves oblong-lanceolate, acute or pointed, obtuse at the base, distinctly petioled ; umbels many-flowered, somewhat panicled, on peduncles half the length of the leaves ; divisions of the corolla ovate, reddish-purple ; hoods of the crown (flesh-color) ovate, about the length of the ascending or scythe-form awl-shaped horns ;

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pods veiny, smooth. — Varies with the leaves a little heart-shaped at the base, and, in var. PÚLCHRA, with broader and shorter-petioled leaves, more or less hairy as well as the stem. (A. pulchra, *Willd.*)— Wet grounds; the smooth form very common northward; the hairy var. southward. July, Aug. — Plant 2° – 3° high, very leafy; the milky juice scanty.

+ + *Leaves alternate-scattered, or the lowest opposite: juice not milky.*

11. **A. tuberòsa,** L. (BUTTERFLY-WEED. PLEURISY-ROOT.) Roughish-hairy; stems erect or ascending, very leafy, usually divaricately branching at the summit, and bearing the umbels in a terminal corymb; leaves varying from linear to oblong-lanceolate, sessile or slightly petioled; divisions of the corolla ovate-oblong (greenish-orange); hoods of the crown narrowly oblong, bright orange, scarcely longer than the nearly erect and slender awl-shaped horns; pods hoary. (A. decúmbens, *L.*) — Dry hills and fields, common, especially southward. July – Sept. — Plant 1° – 2° high, leafy to the summit, usually with numerous corymbed short-peduncled umbels of very showy flowers, which are rather smaller than in No. 1. Root thick and fleshy, as in most species.

+ + + *Leaves nearly all whorled, crowded.*

12. **A. verticillàta,** L. (WHORLED MILKWEED.) Smoothish; stems slender, simple or sparingly branched, minutely hoary in lines, very leafy to the summit; leaves very narrowly linear, with revolute margins; umbels small, lateral and terminal; divisions of the corolla ovate (greenish-white); hoods of the crown roundish-oval, about half the length of the incurved hooked-claw-shaped horns; pods very smooth. — Dry hills, from New England to Wisconsin, especially southward. July – Sept. — Leaves 2′ – 3′ long, scarcely 1″ wide, 3 – 6 in a whorl, or the lowest and uppermost nearly opposite. Flowers small.

2. ACERÀTES, Ell. GREEN MILKWEED.

Nearly as in Asclepias; but the pollen-masses more slender, with longer stalks, and the concave upright hoods of the crown destitute of a horn; whence the name, from *a privative*, and *κέρας, -ατος, a horn.*

1. **A. viridiflòra,** Ell. (GREEN-FLOWERED MILKWEED.) Downy-hoary; *stems low and stout*, ascending; leaves varying from oval or obovate to lanceolate or almost linear, slightly petioled, mucronate-acute or obtuse, thick, at length smoothish; *umbels nearly sessile*, densely many-flowered, *globose*, lateral; divisions of the corolla oblong; *hoods* of the crown *oblong*, strictly erect, *sessile* at the base of the tube of filaments, shorter than the anthers; pods nearly smooth. (Asclèpias viridiflòra, *Pursh.* A. lanceolàta, *Ives.* A. obo-

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vàta, *Ell.*) — Dry hills and sandy fields, Massachusetts to Wisconsin, common southward. July – Sept. — Flowers greenish, when expanded about the length of the pedicel. Leaves singularly variable in form.

2. **A. longifòlia,** Ell. (LONG-LEAVED GREEN MILKWEED.) Minutely hoary; *stem slender,* upright; leaves elongated-linear, roughish; *umbels peduncled, open,* many-flowered; divisions of the corolla ovate-oblong, several times shorter than the pedicels; *hoods* of the crown *short and rounded, raised on the tube of filaments;* pods smooth. — Moist places, Ohio and southward. June, July. — Leaves 5′ – 7′ long, ¼′ – ½′ wide. Flowers half as large as in the last, tinged with yellowish and purplish.

3. ENSLÈNIA, Nutt. ENSLENIA.

Calyx 5-parted. Corolla 5-parted; the divisions erect, ovate-lanceolate. Crown of 5 free membranaceous leaflets, which are truncate or obscurely lobed at the apex where they bear a pair of flexuous awns united at their base. Anthers nearly as in Asclepias: pollen-masses oblong, obtuse at both ends, fixed below the apex to the descending processes of the gland. Pods oblong-lanceolate, smooth. Seeds with a silky tuft, as in Asclepias. — A perennial twining herb, smooth, with opposite heart-ovate and pointed long-petioled leaves, and small whitish flowers in raceme-like clusters on slender axillary peduncles. (Dedicated to *A. Enslen*, an Austrian botanist who collected in the Southern United States early in this century.)

1. **E. álbida,** Nutt. — River-banks, Ohio and southward, common. July – Sept. — Climbing 8° – 12° high: leaves 3′ – 5′ wide.

4. GONÓLOBUS, Michx. GONOLOBUS.

Calyx 5-parted. Corolla 5-parted, wheel-shaped, sometimes reflexed-spreading; the lobes convolute in the bud. Crown a small and fleshy wavy-lobed ring in the throat of the corolla. Anthers horizontal, partly hidden under the flattened stigma, opening transversely. Pollen-masses 5 pairs, horizontal. Pods turgid, more or less ribbed, and armed with soft warty processes. Seeds with a silky tuft. — Twining herbaceous or shrubby plants, with opposite heart-shaped leaves, usually hairy, and racemed or corymbed greenish or dingy purple flowers, on peduncles rising from between the petioles. (Name composed of γῶνος, *an angle*, and λοβός, *a pod*, from the ribbed follicles.)

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1. **G. hirsùtus,** Michx. Minutely pubescent, with longer scattered hairs interspersed; leaves ovate-heart-shaped, obtusish or pointed; *peduncles few-flowered, shorter than the petioles;* pedicels very short; *bractlets awl-shaped;* lobes of the corolla oblong, minutely papillose-hairy outside (dingy purple above); *pods armed with spine-like soft processes.* — Rich river-banks, W. Pennsylvania and southward. July.

2. **G. macrophýllus,** Michx. Leaves broadly ovate-heart-shaped, pointed; *peduncles and pedicels longer than the petioles; bractlets linear;* lobes of the corolla linear or narrowly oblong, downy outside (dingy purple above); *pods ribbed-angled.* — Shady banks, Pennsylvania and southward. July. — Hairy, like the last; the leaves 3′ – 6′ wide.

5. PERÍPLOCA, L. Periploca.

Calyx 5-parted. Corolla 5-parted, wheel-shaped, with 5 awned scales in the throat. Filaments distinct: anthers coherent with the apex of the stigma, bearded on the back: pollen-masses 5, each of 4 united, singly affixed directly to the glands of the stigma. Stigma hemispherical. Pods smooth, widely divergent. Seeds with a silky tuft. — Twining shrubby plants, with smooth opposite leaves, and panicled-cymose flowers. (Name from *περιπλοκή, a coiling round*, in allusion to the twining stems.)

1. **P. Grèca,** L. Leaves ovate or ovate-lanceolate, shorter than the loosely-flowered cymes; divisions of the brownish-purple corolla linear-oblong, very hairy above, the margins revolute. — Introduced from Europe, and sparingly naturalized near Rochester, &c., in W. New York. Aug.

Order 81. OLEÀCEÆ. (Olive Family.)

Trees or shrubs, with opposite and pinnate or simple leaves, a 4-cleft (or sometimes obsolete) calyx, a regular 4-cleft or nearly or quite 4-petalous corolla which is valvate in the bud, sometimes apetalous, but only 2, or rarely 3, stamens, and a 2-celled ovary with 2 suspended ovules in each cell. — Seeds anatropous, with a large straight embryo usually in hard fleshy albumen. — A small family of which the Olive is the type, also represented by the Lilac (*Syríngа vulgàris, S. Pérsica*, &c.) and the Privet in common cultivation, and by two indigenous genera, of which the Ash

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constitutes the distinct tribe FRAXINEÆ, remarkable for its 2–4-petalous or apetalous and polygamous flowers, while CHIONANTHUS has seeds without albumen!

Synopsis.

* Fruit a drupe or berry. Leaves simple.

1. LIGUSTRUM. Calyx 4-toothed. Corolla funnel-form, 4-lobed.
2. CHIONANTHUS. Calyx 4-parted, small. Corolla of 4 almost distinct long petals.

* * Fruit a kind of samara. Leaves odd-pinnate.

3. FRAXINUS. Calyx 4-cleft or none. Corolla of 2 or 4 petals, or often none.

1. LIGÚSTRUM, Tourn. PRIVET.

Calyx short tubular, 4-toothed, deciduous. Corolla funnel-form, 4-lobed; the lobes ovate, obtuse. Stamens 2, on the tube of the corolla, included. Stigma 2-cleft. Berry spherical, 2-celled, 2–1-seeded. — Shrubs with entire leaves on short petioles, and small white flowers in terminal thyrsoid panicles. (The classical name.)

1. **L. vulgàre,** L. (COMMON PRIVET or PRIM.) Leaves elliptical-lanceolate, smooth, thickish, deciduous. — Introduced from Europe, used for low hedges: naturalized by the agency of birds in E. New England and New York. May, June. — Berries black.

2. CHIONÁNTHUS, L. FRINGE-TREE.

Calyx 4-parted, very small, persistent. Corolla of 4 long and linear petals which are barely united at the base. Stamens 2, on the very base of the corolla, very short. Stigma notched. Drupe fleshy, globular, becoming 1-celled and 1-seeded. Albumen none. Cotyledons large and thick. — Low trees or shrubs, with deciduous and entire petioled leaves, and delicate flowers in loose and drooping graceful racemes or panicles. (Name from *χιών*, *snow*, and *ἄνθος*, *blossom*, alluding to the light snow-white clusters of flowers.)

1. **C. Virgínica,** L. Leaves oval, oblong, or obovate-lanceolate, smoothish or rather downy, veiny; flowers on slender pedicels; drupe purple, with a bloom. — River-banks, S. Pennsylvania and southward: very ornamental in cultivation. June. — Petals about 1′ long, narrowly linear, acute, rarely 5–6 in number.

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From Botanical Gazette

BOTANICAL GAZETTE.

Vol. 2. JANUARY, 1877. No. 3.

A NEW CUSCUTA, new at least to North America, comes now from California. A great wanderer is this *C. corymbosa*, which nearly 40 years ago stirred up the botanists of Europe, and the agriculturists not less. This interesting plant has quite a little history of its own. At the period indicated, between 1839 and 1843, an unknown *Cuscuta* made its appearance almost simultaneously in different parts of western Europe, and, singularly enough, always on Lucerne fields. In Germany it was described as *C. suaveolens*, *C. Hassiaca*, *C. diaphana*, and *Engelmannia migrans*, until Choisy, in DC. Prod., recognizing its American origin, took it for *C. corymbosa*, R. & P. In my monograph of Cuscuta, 1859, I established the identity of the immigrant with the South American *C. racemosa*, Mart., which had been introduced into Europe with the much vaunted Chilian *Alfalfa*, in reality the old established European fodder plant, the *Lucerne*, and which proved very destructive to its nurse-plant. After 10 or 15 years the energetic measures of the farmers, together with wet and cool summers, in which the seeds did not mature, seem to have eradicated the plant entirely, and as far as I am informed, it has not been heard of again in Europe. But now, lo and behold, our wanderer makes its appearance in northern California, and, precisely as before in Europe, in Alfalfa fields, "proving very injurious." It has been, without doubt, here also imported from Chili.

Rev. E. L. Greene, who has found so many new native plants in the Shasta Valley, sends also this troublesome newcomer. How long it has been there or whether it has appeared in other parts of California, where under the well-sounding name of Alfalfa the Lucerne is frequently cultivated, is as yet unknown, nor whether it will establish itself permanently. It may be well to direct the attention of the farmers, who cultivate Alfalfa, to this dangerous enemy and to urge them to destroy any dodder which may show itself in their fields, before it can spread or mature seeds. *C. racemosa*, Mart., belongs like our common *C. Gronovii* to the section *Clisto grammica*, characterized by two styles of unequal length tipped with capitate stigmas and a not-opening (baccate) capsule. Ovary and capsule are thickened towards the apex and somewhat pointed; inflorescence loosely paniculated with longish pedicels; flowers 1½—2 lines long, of thin texture, tube of corolla deeply campanulate, widening upwards, spreading lobes inflexed at the acute tip; scales nearly the length of the tube; capsule commonly enveloped by the corolla.

The variety, *Chiliana*, Eng. Cusc. p. 505, to which this form belongs, has larger and more delicate flowers than the original Brazilian type.—G. ENGELMANN.

THE OLDEST LIVING BOTANIST.—The oldest living botanist is probably the Swede Elias Fries, born in 1794, and this eminent man is still active.

He is a profound philosophical Botanist, the basis of whose systematic arrangement of the Fungi is still followed; and the Lichenological system presented in his *Lichenographia Europæa Reformata*, published in 1831, is still, with such modifications as the advance of knowledge requires, the best that has been prepared, and is not likely to be superseded. The introductory remarks should be studied by all who take up this branch of botany, and the descriptions have not been surpassed. Fries's botanical publications are numerous, the most important of them being devoted to the Fungi and Lichens. In 1872 he commenced the publication of an illustrated work on Fungi, several fascicles of which have been published.—W.

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DIPLOPAPPUS ERICOIDES, T. & G.—To save labor to some others who, like myself, work under the double disadvantage of a rather limited library and an herbarium (rich enough in the later new species) with but few specimens from the original sets made prior to 1862, I put the following in print. From our present standpoint it is evident that *Diplopappus* as formerly understood must be partitioned out among other neighboring genera, and of the species that concern us here one goes to section ERICAMERIA of *Aplopappus*, and the other to section ORTHOMERIS of *Aster*. In the unavoidable changing of names a confusion arises under the name above given, i. e., *Diplopappus ericoides*, there being two plants that bear the name in herbaria and books. The following may in some sense clear up the matter:

Diplopappus ericoides, T. & G. *Eucephalus ericoides*, Nutt. "*Inula? ericoides*, Torr! in Ann. Lyc., New York, 2, p. 212. *Chrysopsis ericoides*, Eaton, Man. Bot."

Now placed in *Aster* under Sect. ORTHOMERIS. As the name *ericoides* is preoccupied in this genus I suggest for it *Aster ericæfolius*, which indicates even more closely its general habit.

See also *Diplopappus ericoides*, T. & G., Vol. V., King's Report; Pl. Wright., p. 78; Pl. Fendl., p. 69; Bot. Mex. Bound., p. 78.

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In the last, *Ericameria microphylla*, Nutt., is also cited as another name for the same, and by this it appears in Flora of North America, T. & G., 2, p. 236.

The two plants are so different in habit,—the one suggestive of (so far as arrangement of the foliage goes) *Erica*, and the other of *Adenostoma fasciculatum*, Hook & Arn., or of *Eriogonum fasciculatum*, Benth.—as well as in habitat, that any furthur description is unnecessary.—J. T. ROTHROCK.

BOTANICAL RAMBLES IN EAST FLORIDA.—It was the 16th of February last when the fast and comfortable steamer "Gen'l. Sedgwick" landed me at the beautiful little town of Palatka, located upon an elevated site on the west bank of the river, and about 75 miles from Jacksonville. The enterprise and neatness of the place with its pleasant surroundings make it at once attractive and inviting to the traveler. I walked through the open built town to a hotel and my attention was attracted and my mind absorbed by the novelties along the way. Everywhere appeared the faces of Northern citizens. The handsome white dwellings and large hotels were pleasing to the eye. The natives struggling through the deep loose sand in the streets with their ox-teams suggested poverty with the ludicrous. The wild orange trees laden with golden fruit, and perfuming the air with their fragrant blossoms, ornamented the streets. The mulberry was dropping its ripe fruit. The mocking birds, perched on the shrubs and trees, made the air tremulous with their many and varied tuned melodies. The bee was homeward bound, ladened with the poisonous pollen of the Jessamine. The grasshopper manifesting all the suppleness of a midsummer day, and even the house fly, emboldened with brazen effrontery, would alight in the stranger's way. Indeed, everywhere seemed to be life and it was difficult for me to realize the transition from the cold northland to this balmy June climate of the "Sunny South."

The St. John's is a beautiful stream of water, placid and winding with many fine coves along its banks, and neat cottages with fine orange groves at frequent intervals. So tranquil are its waters that the current is not perceptible save at times as marked by a line of the single floating plants of the *Pistia spathulata*, Michx., which advance from and recede to the coves with the falling and rising of the tide. After several hours sailing the vegetation along the river appeared more advanced, the maple was just in full foliage and the black willow green with leaves, the cypress was dropping its long pendulous aments, and the *Styrax grandifolia*, Ait., white with blossoms. The Australian pine and the saw palmetto are constant companions, and so abundant are the large root stems of the latter that the tannic acid washed from them by the rains and uniting

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with the iron in the soil will produce ink, it is thought, sufficient to account for the dark color of the water of this grand river of four hundred miles in length.

On this more elevated land at Palatka are seen large trees of *Quercus virens*, Ait., and *Magnolia grandiflora*, L. In the streets and lots appear *Nasturtium tanacetifolium*, H. & A., *Sisymbrium canescens*, Nutt., *Sagina subulata*, Wimmer, and *Dichondra repens*, Forst., var., *Carolinensis*, Chois. Out of town one gets into the open pine land where *Pinus Australis*, Michx., is monarch of the forest. Along the streamlets and ponds *Magnolia glauca*, L., *Persea Carolinensis*, Nees., var. *palustris*, Chapm., *Salix nigra*, Marsh., *Myrica cerifera*, L., *Itea Virginica*, L., *Ascyrum Crux-Andreæ*, L., *Gelsemium sempervirens*, Ait., and *Smilax laurifolia*, L., principally make up the thickets. In the open pine land *Quercus virens*, Ait., var., and *Catesbei*, Michx., *Ilex Dahoon*, Walt., and *glabra*, Gray, *Andromeda nitida*, Bartr., *speciosa*, Mx., and *ferruginea*, Walt., contribute mainly to the woody undergrowth. Perhaps a mile from the river the land makes a gentle rise and the low pine land changes to the drier sandy upland. It was on this soil where *Asimina grandiflora*, Dunal, and *Ceanothus microphyllus*, Michx., occurred, and just commenced to flower. With them appeared others of equal interest, like *Sporobolus junceus*, Kunth, *Houstonia rotundifolia*, Mx., *Berlandiera subacaulis*, Nutt., *Phlox procumbens*, Lehm., *Crotalaria ovalis*, Pursh, and the prostrate *Astragalus obcordatus*, Ell. Intermediate to the dense growth, along the river, of deciduous trees and the piny uplands back of it, extend the piny lowlands, the soil of which is wet and requires draining to render it fit for cultivation. In this damper soil *Drosera brevifolia*, Pursh, *Erigeron vernum*, T. & G., *Ascyrum amplexicaule*, Mx., *Hypericum fasciculatum*, Lam., and var. *aspalathoides*, Chapm., *Polygala lutea*, L., *Aster squarrosus*, Walt., not in flower, *Pinguicula lutea*, Walt., and *pumila*, Mx., *Bartonia verna*, Muhl., and *tenella*, Muhl., *Spiranthes gracilis*, Big., *Listera australis*, Lindl., *Calopogon parviflorus*, Lindl. *Hypoxys juncea*, Smith, *Pœpalanthus flavidus*, Kunth, and *Ophioglossum bulbosum*, Michx., appeared at home. *Sarracenia variolaris*, Michx., not yet in flower, but the new leaves were of common occurrence. More sparingly appeared *Vaccinium myrsinites*, Michx., *Satureia? rigida*, Bart., and *Coreopsis aurea*. Ait., the last in general appearance and habit resembling our common *Bidens*. Around the shallow ponds, of which there are many in these pine lands, grew *Utricularia striata*, LeConte, and *subulata*, L. The area for convenient field work after a week's ramble became somewhat monotonous, and with one more walk, in which *Olea Americana*, L., was seen in bloom and *Rhizogonium spiniforme*, Birk., *Tetraplodon australis*, Sull. & Lesq., and *Bryum provinciale*, Phil., in fruit, were added to the list, I took my departure on the U. S. Mail Steamer to another field, about 125 miles farther south, on Lake Monroe. Sailing on this sluggish stream, distant views are intercepted by the frequent and sudden windings of the river and the large trees with the dense undergrowth along its banks. The large ocean steamers are now replaced by smaller ones, and the river becomes narrower and more winding, turning upon itself at sharp angles almost every quarter or half mile, and in many places boats can pass each other only at the interval of the bends. I was impressed with the great abundance of the mistletoe, appearing for a distance of over fifty miles along the river. Scarcely an oak could be seen which had not tufts of this green plant growing on some of its limbs. Occasionally could be seen dead oaks with the dead parasitical growth attached to its limbs, suggesting the idea of mutual starvation. Large red tufts of *Tillandsia cæspitosa*, LeConte, upon the oak, and green mats of *Polypodium incanum*, Swz., on the declining trunks and larger limbs of the same tree, were also of common occurrence. The *Sabal Palmetto*, R. & S., which heretofore appeared sporadically and dwarfed, now became very abundundant, frequently forming dense groves or palmetto hummocks, and attaining a height of 30 to 40 feet. The following morning the steamer stopped a few minutes at a wood station for fuel, presenting an opportunity to examine the vegetation. Although but a five minutes' privilege, I detected *Vitaria lineata*, Swz., *Polypodium aureum*, L. and *Octoblepharum albidum*, Hedw., all on the trunk

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of the Cabbage Palmetto. The golden polypod, as afterwards seen, was most abundant and vigorous on the trunk, 20 to 30 feet from the ground, just beneath and in the shade of the spreading Palmetto leaves. We arrived the same day at Mellonville, located on the south bank of Lake Monroe, a quaint old town with little for attraction to the stranger. The vegetation, however, had changed, and I was soon located and prospecting for new plants. Many of my former acquaintances appeared, and in better collecting condition. but their enumeration will be omitted. The contour and topography of the country, the nature of the soil, and the character of the timber, are essentially the same as at Palatka, except the dense Palmetto hummocks replace the maple farther north. Here also the dense woody timber skirts the lake, and back of this extends the piny lowlands to the piny uplands. On this elevated or salamander land, where these vigilant miners display wonderful activity in the construction of a great number of diminutive mounts, I added to my list *Helianthemum Carolinianum*, Mx., *Stipulicida setacea*, Mx., *Polygala grandiflora*, Walt., *Indigofera tinctoria*, L., *Rhynchosia tomentosa*, var., *monophylla*, T. & G., and *Desmodium triflorum*. The last, as Dr. Chapman tells me, is an introduction from the Indies. In the lowlands grew *Clematis Baldwinii*, T. & G., *Oldenlandia glomerata*, Mx., *Pterocaulon pychnostachyum*, Ell., *Leptopoda puberula*, McBride, *Chaptalia tomentosa*, Vent., *Lygodesmia aphylla*, DC., *Centunculus minimus*, L., *Pinguicula elatior*, Mx., *Gratiola quadridentata*, Mx., *Buchnera elongata*, Swartz, *Sabbatia Elliottii*, Steud., *Tradescantia rosea*, Vent., *Xyris brevifolia*, Mx., *Eriocaulon gnaphaloides*, Mx., and *Fuirena scirpoidea*, Vahl. In the drier and more barren of these lands appeared *Polygala nana*, DC., the dwarf of the genus. In the streets of the village were patches in bloom of *Vinca rosea*, L., and *Eragrostis ciliaris*, Link. Along the lake or river, for the former is simply an expansion of the latter, was found *Sagittaria lancifolia*, L., and on the muddy flats, *Sesuvium pentandrum*, Ell., *Micranthemum Nuttallii* Gr., *Lippia nodiflora*, Mx., and *Azolla Caroliniana*, Willd., the last, like the *Pistia*, assuming an amphibious nature, growing equally well on the land and in the water. In the adjacent hummocks the vegetation was interesting and rich in species, yielding in abundance and in good condition S. Watson's variety of *Lobelia Cliffortiana*, Willd., with *Vicia micrantha*, Nutt., *Ilysanthes grandiflora*, Benth., *Micromeria Brownei*, Benth., *Eryngium Baldwinii*, Spreng., *Samolus Valerandi*, L., var. *Americanus*, Gr., and *Iris hexagona*, Walt., with others of equal interest, like *Berchemia volubilis*, DC., coming in flower, *Epidendrum venosum*, Lindl., in fruit, *Vicia acutifolia*, Ell., *Leptocaulis divaricatus*, DC., *Tillandsia bracteata*, Chapm., with its bright and glossy scarlet bracts, the prolific *T. juncea*, LeConte, and *T. utriculata*, LeConte, *Myrica inodora*, Bartr., *Aspidium patens*, Swz., and *Blechnum serrulatum*, Mx., the last abundant and in fine condition, as well as the *Vittaria* and the golden polypod, previously detected. Near the village of Enterprise, on the north bank of the lake, I met *Zanthoxylum Carolinianum*, Lam., *Modiola multifida*, Mœnch., *Parietaria debilis*, Forst., *Iresine diffusa*, H. & B., and, on the banks of a stream flowing from a large sulphur spring, *Hydrochloa Carolinensis*, Beauv., in dense mats.—A. P. GARBER. [*To be continued.*]

CATALOGUE OF THE FLORA OF THE WABASH VALLEY BELOW THE MOUTH OF WHITE RIVER.—This botanical paper, by J. Schneck, M. D., appears in the report of the Geological Survey of Indiana for 1875. The plants contained in the catalogue are principally from two counties in Indiana, Gibson and Posey, and one county in Illinois, Wabash, although three other counties of the latter State are represented. The region embraced is one of the most interesting and well defined botanical fields in the state and the many rare plants contained in this list are only what botanists acquainted with the topography of the country have expected- Perhaps the most striking physical features of the Lower Wabash are the cypress swamps and bayous with their wealth of aquatic plants and the barrens of the higher ground. These natural openings covered with but scant if any forest growth yield our most prized plants, and a very rapid

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glance over this catalogue will show the many good things such localities have given to our author. It is to be regretted that Dr. Schneck's time is so fully occupied that he cannot keep on hand a stock of duplicates for exchange. A striking feature of the flora of this region is the abundance of southern types. Up this low valley, running nearly north and south, many plants have found their way which one would scarcely expect to meet except in a more decidedly southern flora. These low rich bottoms have yielded such monsters in growth, especially among the climbers, that one is reminded of a South American jungle. Just hear Dr. Schneck's testimony on this subject. "Here I have found a grape vine (*Vitis Labrusca*), thirty-two inches in circumference, and near one hundred and fifty feet long, hanging from the massive branches of a lofty tree, appearing as if a monstrous cable suspended from the overhanging sky; Trumpet Vine (*Tecoma radicans*), thirty-eight and one-half inches in circumference, and climbing to the topmost branches of a tall tree, decorating it from root to top with a profusion of its foliage and orange-red trumpet shaped flowers; Cross Vine (*Bignonia capreolata*), ascending in a straight line the massive shaft of an oak, elm, or black walnut, to the height of seventy-five feet, its green, scarlet tinged foliage of winter persisting until late spring; Single-seed Cucumber (*Sicyos angulatus*), matting all bushes and vegetation, within ten feet of its root, into a thicket, or climbing up a neighboring tree to the distance of sixty-three feet; and in one instance, six climbing plants (*Smilax rotundifolia*, *Menispermum Canadense*, *Ampelopsis quinquefolia*, *Bignonia capreolata*, *Vitis cordifolius*, *Aristolochia tomentosa*), supporting themselves on the body and branches of one small American Elm." The author also gives us the names of several species which he thinks are disappearing with advancing civilization and will eventually have to be stricken from the flora of the Lower Wabash. The principal ones are *Cypripedium candidum* and *parviflorum*, *Aletris farinosa*, *Lilium Philadelphicum* and *superbum*, *Scilla Fraseri*, *Opuntia Rafinesquii*, and *Mertensia Virginica*. The author also states that as prairies were converted into fields the annual fires were soon stopped and as a consequence, in a few years a thick growth of young trees has sprung up, a view which, although it may be correct for a few localities, Prof. J. D. Whitney in recent numbers of the American Naturalist teaches us must be scouted as accounting for the general distribution of the prairie regions. Of course it would be tedious and useless to try to enumerate all the interesting plants listed in this catalogue and we can only refer those interested on the subject to the State publication in which this report occurs.—J. M. C.

Some Iowa Plants.—At the suggestion of friends, in the interest of science, I send you the following names to be added to the Catalogue of Iowa plants. To simplify, we class them by the years in which they were discovered.

1876. To begin, let us note, in the interest of comparative botanical science and the geographical distribution of plants, that those marked with a star (*) do not occur in Prof. Aughey's Catalogue of Nebraska plants, in the rarity and number of which we may feel a certain state pride. I have specimens of all named, and many to spare in most cases.

*Trifolium reflexum**, L., June 26th, old channel of Cedar River, at the bridge five miles above Cedar Rapids, perhaps floated down from Minnesota.

*Œnothera pumila**, L., 26th June, railroad grade, and dry, steep banks, near the above locality.

Penstemon albidus, Nutt, 26th June, near water at the base of the high railroad grade, one mile above Cedar Rapids. Truly fine and rare.

Frœlichia Floridana, Moquin, 13th September, street near the river, Cedar Rapids.* Quite rare.

To which I may add an introduced plant found by Prof. McAfee on the College grounds, *Lotus corniculatus*,* L. How introduced we can only imagine.

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The Gardener's Monthly, November.—Two handsome California plants are described, *Tritelia laxa* and *Brodiœa coccinea*. Accompanying the description of the latter species is an excellent figure of the flower cluster and it promises to become one of our handsomest cultivated plants. The articles of this Magazine are so numerous and varied that we can not even name them, nor select the most prominent, for all are interesting.

Field and Forest, November.—The Flora Columbiana has been brought down among the *Gramineæ*, having stopped in this number with the genus *Eatonia*.

Bulletin of the Torrey Botanical Club, October.—Geo. E. Davenport mentions some peculiar variations of *Aspidium Thelypteris*, Swz. W. R. Gerard states that the fungi *Rhytisma Solidaginis*, and *R. Asteris*, which occur on the leaves of *Solidago* and *Aster*, have turned out to be insect galls.

Home and School, October.—John Williamson describes and figures *Trichomanes radicans*, found at Rock-castle Springs, Ky., by Mrs. Yandell. There are five figures, giving a general view of the plant, and magnified views of the fruit receptacle and sporangia.

A Catalogue of the Forest trees of the United States, by Geo. Vasey, M. D.—This pamphlet is meant to illustrate the "collection of forest-tree sections on exhibition by the Department of Agriculture at the Centennial Exhibition." Sixteen feet is used as the point where a shrub becomes a tree. The pamphlet contains 38 pages giving the range and a few of the prominent characteristics of 419 trees. The two largest genera are the oaks and pines, each of which embrace about 30 species. In getting together the material for this exhibition, which was an immense labor, requiring great skill and patience, and which reflects so much credit upon the Department and its Botanist, four or five species unknown to our flora were obtained. "These are mainly in South Florida, and include two exogens, viz., an *Anona*, or Custard Apple, and a *Chrysophyllum*, or Star Apple; and one endogen, a Palm of the genus *Thrinax*."

Cereus grandiflorus and Cereus Bonplandii, by Richard E. Kunze, M. D.—This paper was read by Dr. Kunze before the Eclectic Medical Society of New York State. It contains a fine colored plate of each species and gives their history, description and therapeutical application.

VARIATIONS IN THE SIZE OF ASTERS. Although prevented by the nature of my work from a full study of the flora of Northern Indiana, yet in my walks along the Wabash and Eel or along one of our railways I can not help being struck with the rich reward a careful study of our fall Compositæ would yield to the zealous student. On every side we see the golden *Solidago*, bending its graceful head in conscious knowledge of its beauty, or the *Helianthus*, standing boldly erect, as if it held the soil by right. Scattered in their midst gleams the bright purple and blue *Asters*, while in almost every sodded nook and corner the bright *Taraxacum* turns toward you its cheerful face. In walks merely for pleasure at the close of a day's labor, many minor points escaped attention, yet one fact struck me particularly in regard to the *Asters*, and that was the little attention they paid to the manual as regards their size. For example *Aster dumosus*, L., said to be from 1°—3° high, very rarely falls below 4° and I have seen it six. Again *Aster ericoides*, L., instead of being from 1°—1½° high, ranges from 2°—4°. On the other hand an *Aster* which I judge to be *A. tenuifolius*, L., is very rarely found 2° high, and yet that is the minimum given in Gray's manual. M. S. C.

All communications should be addressed to

John M. Coulter, Hanover, Ind.

M. S. Coulter, Logansport, Ind.

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Engelmann, Cuscuta hass.
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Botanische Zeitung.

2. Jahrgang. **Den 9. August 1844.** **32. Stück.**

Ueber
Cuscuta hassiaca Pf.

Von

Dr. G. Engelmann in St. Louis,
mitgetheilt von *A. Braun.*

Ein vor wenigen Tagen erhaltener Brief von Dr. Engelmann (datirt vom 28. Mai) enthält nachfolgende Bemerkungen über die von Dr. L. Pfeiffer im vorigen Jahre bei Kassel aufgefundene und im 41. Stück der bot. Zeitung desselben Jahres beschriebene *Cuscuta hassiaca*, welche nach den Mittheilungen von H. Mohl (bot. Zeit. 1843. 1. Stück) in demselben Jahre auch bei Weilmünster in Nassau vom Apotheker Rudio, und zwar in grosser Menge auf *Medicago sativa* beobachtet und nach einer kürzlich erhaltenen Mittheilung vom Apotheker Lehmann auch in der Gegend von Offenbach bei Frankfurt im vorigen Jahre vorgekommen ist. Ein so plötzliches Erscheinen einer vorher nie beobachteten Pflanze, gleichzeitig an mehreren entfernten Lokalitäten, musste den Gedanken an Einschleppung durch landwirthschaftliche Samen erwecken, welcher durch Engelmann's Mittheilungen Bestätigung findet. Die Kasseler Exemplare der *C. hassiaca*, auf deren Untersuchung sich Engelmann's Urtheil gründet, sind mir durch Hrn. Dr. Pfeiffer selbst zur Zusendung an denselben mitgetheilt worden.

Dr. Engelmann schreibt nun über diese Pflanze Folgendes: „Die übersendete *C. hassiaca* Pf. gehört, wie ich auf den ersten Blick sah, zu keiner der hiesigen (nordamerikanischen) Arten, dagegen ist sie ohne Zweifel identisch mit der *Cuscuta*, welche auf Ewigkleeäckern bei Genf gefunden und unter dem Namen *C. chilensis* in verschiedenen Herbarien aufbewahrt wird. Von der wahren *C. chilensis* Ker., von welcher ich Exemplare aus Chili verglichen habe, ist sie übrigens sehr verschieden, und Choisy in seiner Monographie der Cuscuten (Mémoires de la société d'hist. natur. de Genêve. Vol. 9. part. 2. pag. 180.) erklärt sie für *C. corymbosa* Ruiz et Pavon, und giebt zugleich an, dass

sie auch bei Leyden verwildert vorkomme, und dass sie zunächst aus Piemont nach Genf gekommen sei. Nach Piemont sei sie mit Samen von *Medicago sativa*, den man unter dem Namen Alphapha für eine neue Futterpflanze gehalten, gekommen. Da Choisy's sowohl, als Pfeiffer's Beschreibung noch Einiges zu wünschen übrig lässt, ja erstere durchaus vag ist und die Pflanze nicht charakterisirt, so gebe ich eine neue nach Genfer Exemplaren (von Jack gesammelt) und Kasseler (von Pf. mitgetheilt).

Cuscuta corymbosa (Ruiz et Pavon sec. Choisy) caule subcapillaceo, ramoso; fasciculis florum subsessilibus, compositis; floribus singulis pedicellatis, pentameris; calycis semi-quinquefidi lobis obtusiusculis, tubo corollae campanulato-turbinato, calycem subduplo excedente, laciniis limbi ovatis acutis, apice inflexis, erectis, demum patentibus subduplo longiore; staminibus limbo multo brevioribus, filamentis e basi lata subulatis, antheris oblongo-linearibus, squamis fimbriatis incurvis; stylis ovarium pyriforme (basi carnosum constrictum) aequantibus, crassis, faucem corollae attingentibus; stigmatibus capitatis; capsula ....

Die Genfer Exemplare haben kleinere Blüthen, kürzere Blüthenstiele, eine etwas weitere Blumenröhre, breitere an der Basis etwas geöhrte Lappen der Blumenkrone, die sich auch an der geöffneten Blüthe noch decken, etwas kleinere, weniger tief zerschlitzte Schuppen und im allgemeinen eine dichtere, festere Textur der Blüthentheile. Die Kasseler Pflanze hat eine grössere, etwas mehr röhrige Blumenkrone mit nicht geöhrten, an der Basis nach dem Aufblühen sich nicht mehr deckenden Lappen, tiefer geschlitzte Schuppen, die aus der Blumenröhre hervorragen und im Allgemeinen membranösere, zartere Textur der Blüthentheile. Es sind dies Verschiedenheiten, denen kein specifisches Gewicht beigelegt werden kann, wie ich mich häufig an unseren nordamerikanischen Arten im Freien überzeugt habe. Die Kasseler Exemplare stellen die mastere Form dar, in einem nassen Jahre erwachsen! — Charakteristisch ist ausser der nicht aufspringenden

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Wasserräder leiten dieses in Spanien so kostbare Element in alle Felder und Gärten. Den Hauptzweig des Ackerbaues bildet die Kultur des Weizens; ausserdem wird namentlich viel Hanf und westlich von Valencia nach dem See Albufera zu sehr viel Reis gebaut. Die Felder sind umgeben von Alleen von Maulbeerbäumen, und im Osten und Norden der Huerta giebt es ausgebreitete Pflanzungen von Oliven, die hier viel grösser und schöner sind, als die krüpplichen strauchartigen Oelbäume der Provence. Ausserdem giebt es viel Feigen-, Citronen- und Orangenbäume, besonders in der Nähe der Landhäuser, während die Wege und Strassen von Alleen von Ulmen, *Populus canescens*, *nigra* und *monilifera* garnirt sind. Ziemlich selten erblickt man die Dattelpalme, welche jedoch hier bereits eine Höhe von 40—60′ erreicht. Häufiger sieht man sie in den Gärten und Höfen der zahlreichen Klöster in und um Valencia. So habe ich z. B. in dem Hofe des Klosters San Miguel de los Reyes 12, in dem der Cartucha Ara Cristi unweit Murviedro gegen 30 hochstämmige Palmen gesehen. Die einzelnen Besitzungen in der Huerta sind meist von Hecken von *Arundo Donax* L. umgeben, welches an etwas feuchten Orten in der warmen Region überall wild wächst, oder von *Tamarix gallica* L., in der Nähe des Meeres auch wohl von *Agave americana* und *Cactus Opuntia*. Letztere wird auch in mehreren Gärten der Cochenille wegen kultivirt, findet sich aber überall wild an steinigen sonnigen Orten der warmen Meeresregion, wie sie denn z. B. den ganzen Süd- und Ostabhang des Kastells von Murviedro mit undurchdringlichen manneshohen Gebüschen bedeckt, in welchen man Stämme von 4—5″ Durchmesser erblickt. Von krautartigen Gewächsen baut man ausserdem in der Huerta sehr viel Erdbeeren, Artischocken, Zwiebeln, Lauch, Bohnen, Erbsen, *Vicia Faba* L., und namentlich die in Spanien so beliebten Garbanzos (*Cicer arietinum* L.). Die Wassergräben sind fast durchgängig mit *Iris Pseudacorus* garnirt, und erfüllt mit unsern *Lemna*- und *Potamogeton*-Arten. Eine hübsche rothblühende *Silene* ist nicht selten und an den Mauern wächst überall *Hyoscyamus albus* L. in üppiger Fülle, während die Hecken von *Fumaria capreolata* L. und Rubiaceen durchzogen sind. Alle Sandplätze, namentlich die Ufer des Rio Turia sind bedeckt mit *Plantago Coronopus* L., *Calendula officinalis* L., Erodien und Euphorbien.

Sobald es die Witterung erlaubte, machte ich eine Excursion nach dem 2 Stunden westlich von Valencia gelegenen grossen See Albufera, der durch einen schmalen Kanal mit dem Meer in Verbindung steht. Fast alle seine Ufer sind mit Reisfeldern bedeckt, nur die etwa $^1/_4$ Stunde breite Landzunge,

welche den See vom Meere trennt, und fast nichts als eine Anhäufung von Sand ist, wird von einem Wald von *Pinus Halepensis* Mill. eingenommen. Dieser kleine Wald gehört zu den pflanzenreichsten Orten in den nächsten Umgebungen von Valencia, weshalb ich ihn oftmals besucht habe. Der Boden ist mit einem niedrigen Unterholz bedeckt, welches hauptsächlich aus *Quercus coccifera*, *Myrtus communis* und *Chamaerops humilis* gebildet wird; darunter befinden sich häufig Sträucher von *Juniperus Oxycedrus* L., *Rhamnus lycioides* L., *Erica arborea* L., *Rosmarinus officinalis* L., *Ruscus aculeatus* L., *Pistacia Lentiscus* u. a. Am Ufer der Albufera im losen Flugsande findet man ziemlich häufig grosse Sträucher von *Solanum Sodomaeum* L. mit oft armsdicken Stämmen, und die mehr grasigen Plätze bedeckt *Trixago Apula* Col. *β. versicolor*, *Lagurus ovatus* L. u. a. Im Innern des Gehölzes finden sich mehrere *Helianthema*, *Coronilla juncea* L., *Urospermum picroides* Desf. und häufig *Elaeoselinum foetidum* Boiss., welches jedoch noch nicht in Frucht stand. In dichtem Gebüsch wächst sehr selten *Lonicera implexa* Ait. und in der Nähe der Küste die schöne *Iris filifolia* Boiss., doch ebenfalls sehr vereinzelt. Die zahlreichen seichten Lagunen, welche sich zwischen der Albufera und dem Meere befinden, sind erfüllt mit Charen und Potamogetonen, die auch den Grund der Albufera bedecken, und umgeben von *Juncus acutus* L. Die grasigen Sandhügel vor dem Kieferwald sind über und über bedeckt von *Cistus albidus* L. und *C. salvifolius* L., während die kahlen Sanddünen nach dem Meere zu von *Asphodelus fistulosus* L., Euphorbien und *Passerina hirsuta* L. bewachsen sind. In der Nähe des Meeres fand sich ziemlich vereinzelt *Ononis Natrix* L. und ein seidenhaariger *Lotus*. In der Albufera kommt auch die *Vallisneria spiralis* vor, welche hier Cavanilles und in der neuesten Zeit Blanco gefunden haben; ich habe sie jedoch nicht angetroffen, obwohl ich mich ihretwegen mehrmals auf dem See eingeschifft habe.

Literatur.

Curtis's *Botanical Magazine*. Juni-Heft 1844.

Tafel 4090. *Laelia superbiens* Lindl. Bot. Reg. Misc. 1840. No. 87. et sub Tab. 62. 1842. Bateman Orch. of. Guatem. and Mexico. t. 38.

Hr. Skinner entdeckte diese durch zahlreiche Blüthen wie durch das Colorit derselben ausgezeichnete Art in den gemässigteren Gegenden von Guatimala. Sie gedeihet am besten in einem etwas kühlen Gewächshause und blühet im Spätherbst.

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Tafel 4091. *Disa cornuta* Swartz Gen. et spec. Orchid. p. 26. Thunbg. Fl. cap. p. 7. Lindl. Gen. et spec. Orchid. p. 349. *Satyrium cornutum* Thbg. Prodr. p. 5. *Orchis cornuta* Linn. Sp. pl. p. 1330.

Sie stammt vom Vorgebirge der guten Hoffnung, blühet im December und ist sehr häufig lebend eingeführt, aber eben so oft wieder ausgegangen. Sie ist weniger schön als *Disa grandiflora*, aber eben so schwierig als jene zu kultiviren.

Tafel 4092. *Morina longifolia* Wallich Cat. n. 426. DC. Prodr. 4. p. 644. Lindl. Bot. Reg. 1840. t. 36. *Morina Wallichiana* Royle Himal. Bot. p. 245. tab. 55.?

Eine für das freie Land sich eignende Zierpflanze, die vom Dr. Wallich in Gossam Than entdeckt und von dem Dr. Royle in den Gebirgen von Cashmere gefunden wurde.

Tafel 4093. *Ceropegia oculata* Hooker; caule herbaceo volubili glabro; foliis cordato-ovatis acuminatis hirsutulis ciliatis, basi glandulosis; pedunculis patenti-hirsutis 4—6floris; corollae tubo basi valde inflato globoso, limbo latiore, limbi segmentis oblongis erecto-conniventibus ciliatis, inferne luteis, nigro-oculatis, superne intense viridibus, lobis coronae stamineae exterioribus attenuatis emarginatis, interioribus anguste linearibus, rectis strictis integerrimis.

Sie hat einige Aehnlichkeit mit der *Ceropegia vincaefolia*, von der sie sich durch grössere Blüthen, eine aufgeblasenere Basis derselben und durch eine abweichende Form der Lippe und der Corona unterscheidet. Sie blühet im September in einem warmen Hause und stammt aus Bombay.

Tafel 4094. *Barkeria spectabilis* Bateman Orch. of Guatem. and Mexico t. 33.; caulibus 2—3phyllis; foliis oblongis coriaceis; racemo laxo multifloro terminali; sepalis lanceolatis acuminatis; petalis ovato-lanceolatis acuminatis; labello ovato subunguiculato medio longitudinaliter lamellato.

Diese Zierpflanze ist in den gebirgigen Gegenden von Guatimala zu Hause, gelangt in einem warmen Orchideenhause nie zur Blüthe und stirbt augenblicklich, wenn man ihr Torfstücke zur Wohnung und Anheftung der Wurzeln giebt. In Körben, welche mit Moos und Holzstücken gefüllt sind, gedeihet sie hingegen vorzüglich und trägt zugleich Blüthen bei niedrigerer Temperatur.

Tafel 4095. *Loasa Pentlandii* Paxton's Magazine Febr. 1842. Foliis oppositis elongatis pinnatifidis; calycis lobis pinnatifidis; appendicibus duabus clavato-filiformibus ad apicem petalorum minorum; stylo trialato; disco epigyno lobato; fructu turbinato, recto.

Diese Pflanze erreicht eine Höhe von $3^1/_2$ F. Der Stamm ist schlank und holzartig und fordert eine Stütze. Die Blüthen haben die Grösse und das Colorit der *Cajophora lateritia*. Sie stammt aus Peru und blühet im Juni und Juli. Bei uns (z. B. im königlichen Schlossgarten zu Schönhausen bei Berlin) gedeihet sie im freien Lande. *F. Kl.*

Botaniska Utflygter. En samling af strödda Tillfällighets-skrifter, utgifne af El. Fries. Första Bandet. Upsala, Lundequist, 1843. 8. IV. u. 328 S.

Der Verf., der die Mehrzahl seiner wissenschaftlichen Abhandlungen in fremden Sprachen geschrieben hat, will in dieser Arbeit, die in mehreren Bänden folgen soll, seinen Landsleuten populäre Darstellungen aus verschiedenen Gebieten der Wissensenschaft darbieten; er glaubt nicht nur, das Publikum müsse durch solche an das Lesen mehr wissenschaftlicher Bücher gewöhnt werden, sondern sieht es auch als einen für die Wissenschaft grossen Verlust an, wenn dieselbe in einem Lande eine in der Landessprache geschriebene Literatur entbehrt. Der vorhandene erste Theil enthält folgende Abhandlungen:

1. Äro Naturvetenskaperna något bildningsmedel? (Sind die Naturwissenschaften ein Bildungsmittel?). Ein herrliches Stück voll poetischer Begeisterung und wahren Blickes des Genies. Der Verf. deutet an, wie viele Beschuldigungen man den Naturwissenschaften vorgeworfen hat; bald sind sie nichts weiter als geistlose Verzeichnisse nackter Thatsachen; bald leiten sie nur zum Materialismus; bald sollen sie junge Leute so leicht verleiten, dass diese für bessere Studien nicht taugen u. s. w. — Alles Einwürfe der Kämpfer für den Latinismus, die mit wahrem Mitleiden auf die arme Natur und ihre Geschenke hinabsehen. Der Verf. weist nach, dass alle diese Beschuldigungen ohne allen Grund sind, dass selbst in den Tagen, wo die Naturwissenschaften am meisten unbekannt waren, der Materialismus in Verbindung mit dem Aberglauben am allermeisten verbreitet war, und sieht die Naturwissenschaften als nothwendige integrirende Bestandtheile einer wahren humanistischen Bildung an; er sagt in der Vorrede zu diesem Aufsatze: Ist das humanistische dasselbe wie das rein menschliche, kann ja wohl kein Studium mehr humanistisch sein als das der Natur; diese ist die Schule der ganzen Menschheit, bis man an die Universität der Ewigkeit demittirt wird.

2. Grunddragen af Aristoteles' Vext-lära. (Die Grundzüge der Gewächslehre des Aristoteles). Eine

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Darstellung des Vornehmsten, was Aristoteles über die Erscheinungen der Gewächse bekannt war, insofern dasselbe zu uns gekommen ist. In der Hauptsache folgt der Verf. der Arbeit, welche der Prof. Wimmer über die Aristotelische Gewächslehre herausgegeben hat, ohne eine eigentliche Uebersetzung zu liefern.

3. Botanisk-antiquarisk Excursion öfver Grekernas Nymphaeaceer (Botanisch-antiquarische Excursion über die Nymphaeaceen der Griechen). In der Vorrede berührt der Verf. die nahe Beziehung, in welcher historische Erzählungen und pflanzliche Gegenstände sehr oft zu einander stehen, in sofern jene von diesen bisweilen wichtige Aufklärungen erhalten können; er weist nach, wie gewisse Gewächse den Völkern auf allen ihren Streifzügen treu folgen, sich mit denselben ansiedeln. Der Verf. kommt so zu dem Alter der Bäume. Der Aufsatz zerfällt in folgende Paragraphen: §. 1. Nymphaeaceernas natural historia (Die Naturgeschichte der Nymphaeaceen). §. 2. Öfver de af Grekerna kännda Nymphaeaceer (Ueber die den Griechen bekannten Nymphaeaceen). Zu diesen gehören nach dem Verf.: 1. *Nelumbium speciosum*, 2. *Nymphaea Lotus*, 3. *Nymphaea coerulea*. — §. 3. Vigtigare ställen hos Grekiska författare (Wichtigere Stellen bei griechischen Verfassern). §. 4. Öfver Grekiska författarnas commentatores (Ueber die Commentatoren der griechischen Verfasser. §. 5. Inhemska folksägner semförda med Grekernas (Einheimische Volkssagen mit denen der Griechen verglichen). §. 6. Resultater af det anförda (Die Resultate des Angeführten). — Da das *Nelumbium speciosum* in Medien zu Hause, früher in Egypten kultivirt, jetzt aber in diesem Lande ausgegangen ist, findet der Verf. darin einen Beweis für Heerens Ansicht, dass der Isiscultus, dem diese Pflanze heilig war, aus Indien herstamme, und stellt mehrere interessante Resultate dar, bei welchen wir nicht verweilen dürfen.

4. Öfver Vexternas namn (Ueber die Namen der Gewächse). 1. Vextnamnens Etymologie (Die Etymologie der Gewächsnamen). 2. Utkast till vextnamnens historia (Grundriss der Geschichte der Gewächsnamen). 3. Linneanska Reformen af Nomenclaturen (Die Linneanische Reform der Nomenclatur). Das letzte Stück empfehlen wir solchen Botanikern, die durch die Veränderung der Namen sich selbst nicht nur Verdienste, sondern auch der Wissenschaft Nutzen zu bringen glauben.

5. Vexternas Ursprung (Der Ursprung der Gewächse). Hier viele Bemerkungen über Generatio originaria, aequivoca et spontanea; diese kann der Vf. durch keinen einzigen der Beweise als erwiesen ansehen. Von einer hypermorphosis (d. h. einem Uebergange eines Gewächses in ein anderes) wie sie

Agardh z. B. in Metamorphosi Algarum und Kützing in Linnaea (8. Bd. 3. Heft) dargestellt haben, will unser denkender Verf. nichts wissen; alle diese Lehre vertheidigenden Ansichten beruhen auf unvollkommener Beobachtung. Der Verf. sieht mehrere Formen, z. B. *Phylleriaceae*, *Hygrocrocis*, *Mycoderma*, *Mycomater*, *Protococcus* hier, wie in allen seinen übrigen Schriften, als nicht selbstständige Gewächse an *).

6. Wåren, en botanisk betraktelse (Der Frühling, eine botanische Betrachtung). Der Verf. fordert die jungen Botaniker Schwedens auf, durch Beobachtungen über das Ausschlagen und das Blühen der Gewächse, Beiträge zur Bestimmung vom Verrücken des Frühlings gegen Norden zu liefern; und viele hierher gehörende interessante Beobachtungen werden vom Verf. mitgetheilt.

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*) Kützing sagt in seiner Recension über die Arbeit des Prof. Meneghini, Botan. Zeitung 1843. p. 463.: wobei er (Meneghini) sich durch die Autorität von Fries zu der irrigen Annahme verleiten lässt, dass die niederen Algformen, welche er in der vorliegenden Monographie beschreibt, constante Bildungen seien. — Da aber nicht nur Agardh (Syst. Alg. 1824), sondern auch Kützing selbst (Linnaea, 8. Bd. p. 365. und folgende) viele hieher gehörende Gegenstände als *Pflanzenarten* beschrieben haben, so kann man fragen: warum hat sich der ausgezeichnete Meneghini nur durch Fries zu diesem Irrthum verleiten lassen? warum nicht durch Agardh? warum nicht durch Hrn. Kützing selbst? Vergleichen wir die Schriften von Fries, so findet man, dass er nie z. B. eine *Protococcus*-Species beschrieben hat; schon im Syst. Orb. Veget. (1825) p. 356. nimmt er *Chlorococcum* (*Protococcus*) als nicht selbstständige Pflanze auf und sagt: „species vix dantur"; in der Lichenographia Europaea p. XX. not. 6. „oritur" (*Chlorococcum* seu *Protococcus*) „tam a Lichenosis quam a Phyceis, immo ab Infusoriis. Duplex ejus status progressivus, primarius (*Palmella botryoides* Lyngb.), et regressivus, secundarius (*Protococcus*)". Man sieht hieraus, dass Fries diese *Palmella* als selbstständig nicht ansieht. In der Flora Scanica p. 296. heisst es von *Byssaceae spuriae*: „vulgo cum praecedentibus confusae, sed absque fructificatione tantum obviae et *ex autonomarum plantarum censu prorsus excludendae*"; und unter diesen *Byssaceae* ist *Protococcus* aufgeführt. Aber nicht nur Bildungen, die den Nostochineen beigezählt werden, hat Fries zuerst als nicht selbstständige betrachtet, sondern im Syst. Orb. Veg. p. 313. weist er nach, dass viele andere von Agardh und den übrigen Schriftstellern als selbstständige aufgenommenen Phyceen-Arten, z. B. die der *Trib. Conf. fonidarum* Ag., den Gattungen *Myrionema*, *Protonema* etc. angehörenden, auch nicht selbstständige Bildungen sind. Kützing selbst ist auch dieser Meinung (Linnaea 1843). Einige Beschuldigungen der Art von Corda, in dem 5ten Hefte von dessen Historia Fungorum, in Hinsicht mehrerer Schwämme, deren nicht selbstständige Natur Fries zuerst im Syst. Mycologicum erwiesen hat, verdienen keine Erwähnung. — Schleiden Grundzüge p. 93. — Was aber Herrn Kützing betrifft, so glauben wir ihm um der Wahrheit willen diese Anmerkung schuldig zu sein.

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7. En blick i Vextlifvets verkstad (Ein Blick in die Werkstatt des Pflanzenlebens). Eine populäre Darstellung des pflanzlichen Lebens; viele eigenen Ansichten. Im Allgemeinen scheint der Verf. den Beobachtungen von Schultz zu viel zu vertrauen.

8. Vexternas Fädernesland (Das Vaterland der Gewächse). Allgemeine Anmerkungen über die Pflanzengeographie. Der Anbau eines Landes verdrängt die ursprüngliche Vegetation und viele Pflanzen sind schon in Schweden ausgegangen, z. B. *Trapa*, *Xanthium* u. m. a., andere dagegen z. B. *Vicia pisiformis*, *V. dumetorum*, *Stipa* verschwinden vielleicht bald; andere, vorher ganz wilde, sind nur als cultivirte vorhanden. *A.*

Gelehrte Gesellschaften.

Verhandlungen der Pariser Academie. Jul. — Decb. 1843. Comptes rend. XVII.

Ueber die Beugung der Pflanzenstämme gegen gefärbtes Licht, von Dutrochet.

Payer habe in der Sitz. vom 26. Decbr. 1842 (vergl. bot. Zeit. I. 339.) angegeben, dass sich die jungen Stengel der Gartenkresse nur unter dem Einflusse der blauen und violetten, aber niemals unter dem Einflusse der rothen, orangefarbenen, gelben und grünen Strahlen krümmen. Der Verf. stellte Versuche mittelst eines Glases an, welches nur rothe Strahlen durchliess, mit welchem er ein innen schwarz gefärbtes Kästchen bedeckte, welchen Apparat er dem zerstreuten Lichte aussetzte. In Beziehung auf die *Gartenkresse* fand er Payer's Angabe bestätigt; junge Pflanzen von *Alsine media* verhielten sich dagegen ganz anders, indem sie unter dem Einflusse des rothen Lichtes sich bei 22° Wärme in 4 Stunden krümmten; der Verf. drehte nun den Apparat um, so dass nun die Stämmchen dem einfallenden Lichte ihre convexe Seite zuwendeten; 4 Stunden später waren sie bereits gegen das Licht zu gebogen. Die Stämmchen von *Lepidium* hatten einen Durchmesser von 0,8 Millimeter, die von *Alsine* nur von 0,4. Der Verf. vermuthete, dass hierin der Unterschied in ihrem Verhalten begründet sein könne, und stellte Versuche mit folgenden Pflanzen an, deren Stämmchen er mikrometrisch mass:

	Durchmesser des Stammes.
Lepidium sativum	80 Hunderttheile eines Millimeters.
Medicago sativa	80 — — —
— *lupulina*	66 — — —
Trifolium pratense	65 — — —
— *agrarium*	55 — — —
Mercurialis annua	50 — — —
Senecio vulgaris	45 — — —
Alsine media	40 — — —

	Durchmesser des Stammes.
Papav. somniferum	40 Hunderttheile eines Millimeters.
— *Rhoeas*	35 — — —
Sedum acre	30 — — —
Arenaria serpyllifolia	20 — — —

Die vier ersten dieser Pflanzen zeigten unter dem Einflusse des rothen Lichtes keine Beugung, wohl aber alle folgenden und zwar im Verlaufe des ersten Tages, an welchem sie dem rothen Lichte ausgesetzt wurden. *Alsine media* war die empfindlichste.

Hier beugten sich also die Stämmchen unter dem Einflusse des rothen Lichtes, in den Versuchen von Payer hatten sie es unter dem Einflusse des blauen und violetten gethan, es scheint daher dem Verf. gewiss zu sein, dass sie es auch unter dem Einflusse des gelben, orangefarbenen und grünen thun werden. Der Verf. ist geneigt anzunehmen, dass dabei nicht die Beschaffenheit der verschiedenen Lichtstrahlen, sondern ihre leuchtende Kraft, die nach der Durchsichtigkeit des angewendeten Glases verschieden sei, wirksam sei. Unter dem rothen Glase fand auch das Schlafen und Wachen der Blüthen von *Leontodon Taraxacum*, *Hieracium sylvaticum*, *Bellis perennis*, *Campanula Speculum* statt, ebenso das Schlafen und Wachen der Blätter von *Portulaca oleracea*. Die Stengel der unter dem rothen Glase befindlichen Pflanzen verlängerten sich stärker als unter dem Einflusse des gewöhnlichen Lichtes, wie dieses bei unzureichendem Lichteinflusse immer stattfindet.

In Beziehung auf die Abhandlung von Payer über das Fliehen der Wurzeln vor dem Lichte (Sitz. vom 6. Novbr. 1843) beklagt sich der Verf., dass Payer diese Beobachtungen für durchaus neu ausgebe, indem er doch (Mémoires II. 60.) ähnliche Beobachtungen angestellt und sogar eine Ausnahme gefunden habe, indem er gesehen habe, dass sich eine grün gefärbte Wurzel von *Mirabilis Jalappa* gegen das Licht gekrümmt habe. Die Angabe, dass nur der zwischen die Strahlen *F* und *H* fallende Theil des Spectrums in Beziehung auf die Richtung der Wurzeln wirksam sei, bezweifelt der Verf. Dieser Theil bestehe aus einem Theile der grünen, aus den blauen, indigoblauen und ungefähr der Hälfte der violetten Strahlen. Früher habe Payer nur den blauen und violetten Strahlen eine Wirksamkeit in dieser Beziehung zugeschrieben, nun bestreite er dieselbe bei den extremsten violetten Strahlen und schreibe sie einem Theile der grünen zu, die ersteren haben aber eine sehr geringe leuchtende Kraft, während die letzteren dem Maximum des Erleuchtungsvermögens des Spectrums nahe stehen. Man müsse untersuchen, ob nicht dünnere, beweglichere Wurzeln auch das gelbe und rothe Licht fliehen.

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Zetterstädt's Reise.

(*Schluss.*)

Am 5. Septbr. ging die Reise von Tuna weiter hinab nach Nerike. Die Erndte war bereits allenthalben geborgen und der frisch angesäete Roggen breitete eine grüne Decke über das Ackerfeld. Bei Naglarby wurde eine hundertjährige dreistämmige Eiche, die man wohl zu den grössten im Reiche rechnen kann, in Augenschein genommen; am See Björkljusna bei der Station Rusgård wuchsen allgemein: *Lobelia Dortmanna*, *Ribes rubrum*, *Juncus supinus* niedrig, verblüht, *Subularia aquatica*, so wie *Lycopodium selaginoides*. Am Seestrand bei Oestansbo wurde am 6. Septbr. *Galium trifidum*, eine Varietät von *Arabis Thaliana*, sehr gleich mit var. β. *urbicola* Hartm., aber die Blume etwas kleiner, Stengelblätter kürzer und schmaler, sowie die Schoten kürzer und mehr abstehend, auf trokkenen Hügeln allgemein, nebst dem ebenfalls allgemeinen *Equisetum hiemale* gefunden. Bei Högfors in Nerike wurde bemerkt *Turritis hirsuta* (*Robinia Caragana* mit Blumen und Früchten und *Inula Helenium* waren hier angepflanzt).

Bei Laxbro wurde *Juncus supinus* β. *fluitans* Hartm., *Carex elongata* und *Aquilegia vulgaris* verwildert gefunden. Am Wege bei Guldsmedshytta stand *Silene rupestris*, und auf einem Kornfeld nicht weit davon *Campanula persicifolia*. In einem in den Får-See fallenden Fluss wurde am 8. Septbr. *Potamogeton curvifolius* Hartm., nebst *Chara fragilis* Desv., Wallm. et Zetterst. in conspectu plantar., beide in Menge gefunden. *Cirsium heterophyllum*, das in ganz Jemtland sehr gemein war, aber in Dalarne verschwunden zu sein schien, zeigte zeigte sich hier wieder in Menge. Ebenso *Heracleum Sphondylium* nebst *Angelica silvestris* am Ufer des Flusses.

Bei Oeskevik wuchs *Fraxinus excelsior* gross und klein, nicht selten zwischen Espen und Birken. Auf trocknen Stellen wuchs *Silene rupestris* und *Aquilegia vulgaris*. *Campanula patula*, die vom mittlern Helsingland her allenthalben eine Zierde der Wiesen war, schien um Nora die Grenze für ihre allgemeinere Ausbildung zu finden. Weiter hinab, bei Skärmarboda, sah Herr Prof. Zetterst. das letzte Exemplar dieser schönen nordischen Glockenblume. Am 20. Septbr. langten die Reisenden wieder in Lund in Schoonen an.

Besondere Erwähnung verdient eine für die Pflanzengeographie interessante Mittheilung des Häradshöfding Kröningssvärd, wodurch eine Bemerkung des Prof. Fries zu den schwed. Weidenarten in Lindbl. Botan. notiser p. 184. bekräftigt wird, dass nämlich *Salix daphnoides* Villars, bis jetzt als norwegische Pflanze bekannt, nun in Menge wachsend auf den sogenannten Sandwiesen nördlich und nahe bei der Kirche Mora in Dalarne gefunden worden, ebenso auch, dass die Angabe, dass *Vicia pisiformis* L. weiter hinab in Dalarne wachse, Glauben verdiene.

Sammlungen.

Hr. J. F. Drège, durch seine auf langen Reisen in Südafrika zusammengebrachten Pflanzensammlungen rühmlichst bekannt, ist jetzt auch im alleinigen Besitz der von Hrn. Ecklon früher nach Europa gesendeten und zum Verkauf bestimmten Pflanzensammlungen, deren früher bestimmten Preis er auf die Hälfte herabsetzen und das Nähere über den Verkauf derselben bis spätestens September d. J. der botanischen Welt mittheilen wird.

Reisende.

Prof. K. Koch befand sich Mitte Mai in Tiflis, um die Flora Kaukasiens zu studiren, er hatte in der Gegend von Tiflis das Vaterland vieler Steinfrüchte erkannt, namentlich der Kirschpflaume, Schlehen, Zwetschen und der Herzkirsche, die dort wild wächst und schöne grosse gelbe Früchte trägt, während die Sauerkirsche (wahrscheinlich eine nördlichere Pflanze) dort nicht wild vorkommt. Die Herzkirsche heisst auch auf armenisch noch jetzt giras und auf türkisch keras, woher wohl das Cerasus des Lucullus stammen wird, der bekanntlich die ersten Kirschen nach Italien brachte. Die Sauerkirsche heisst dort bal. (Berl. Nachr. N. 147.)

Kurze Notizen.

Stuttgarter botanische Tauschanstalt. Apotheker W. Lechler in Stuttgart liess vor Kurzem ein etwa 2500 Nummern starkes Verzeichniss von getrockneten Pflanzen drucken, welche zum Tausch und Verkauf angetragen werden. Für 100 Exemplare liefert die Tauschanstalt 90, wer den Kauf vorzieht, bezahlt für die Centurie 10 Fl. rhein.

Redaction: Hugo Mohl. — D. F. L. von Schlechtendal.
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Botanische Zeitung.

4. Jahrgang. **Den 17. April 1846.** **16. Stück.**

Inhalt. **Orig.:** Engelmann u. Al. Braun Bemerk. üb. Cuscuten. — Schimper üb. Rüppel's Ansicht von d. Netzrelieffen b. d. Hildburghäuser Thierspuren. — Ders. Floratio, Florescentia et Inflorescentia. — **Lit.:** Hooker the Lond. Journ. of Bot. 1845. — **Samml.:** Flor. Gall. et Germ. exs. V. VI. — **K. Not.:** Unfruchtbarkeit der Dattelpalme in Algier. — Brennnessel b. d. Ostiaken. — Pflanzenverkauf in Paris.

Bemerkungen über Cuscuten

von Georg Engelmann, mitgetheilt von Alexander Braun.

Da die Cuscuten, ungeachtet des vielseitigen Interesses, welches sie bieten, zu den verhältnissmässig noch wenig gekannten Pflanzen gehören, indem selbst über die in Deutschland vorkommenden Arten die Akten noch lange nicht geschlossen sind, so scheint es mir nicht unzweckmässig, einige Bemerkungen über diese Gewächse zur Oeffentlichkeit zu bringen, welche mir mein Freund Engelmann in St. Louis in seinem letzten Briefe mitgetheilt hat. Ich werde denselben später einige eigene Beobachtungen anhängen, durch welche ich zur Naturgeschichte der Arten der deutschen Flora einige Beiträge zu liefern hoffe.

1.

Natürliche Anordnung der Arten der Gattung *Cuscuta* nach G. Engelmann (Juli 1845).

I. Cuscutae stigmatibus elongatis, capsulis circumscissis:

A. Ovario conico, stylis coalitis:

a. Stylis omnino coalitis:

1. *C. monogyna* Vahl.
2. *C. astyla* E.

b. Stylis basi coalitis:

3. *C. macrantha* Don.
4. *C. pedicellata* Ledeb.

B. Ovario globoso, stylis a basi distinctis:

a. Ovario majore, stigmatibus cum stylis brevioribus ovarium aequantibus vel eo brevioribus:

5. *C. Epilinum* Weihe.
6. *C. europaea* Auct. (*major* C. Bauh. Chois.)
7. *C. arabica* Fresen.

Anmerk. In diese Abtheilung gehören noch mehrere Formen aus dem südlichen Europa und von den canarischen Inseln, deren specifische Charaktere noch nicht hinreichend ausgemittelt sind.

b. Ovario minore, stigmatibus cum stylis aequantibus ovario multo longioribus:

8. *C. Epithymum* Sm. (*minor* C. Bauh. Chois.)
9. *C. cupulata* E.
10. *C. planiflora* Tenore (vorausgesetzt, dass die im südlichen Tyrol auf *Colutea* wachsende Art wirklich diese ist).

II. Cuscutae stigmatibus capitatis, capsulis indehiscentibus (baccatis):

A. *Gerontogeae*: (Die Mehrzahl derselben ist noch nicht hinreichend untersucht, um unter die amerikanischen Arten am rechten Orte eingereiht zu werden; hierher z. B.)

11. *C. ciliaris* Kotschy.
12. *C. sulcata* Roxb.

B. *Americanae*:

a. Chlorocarpae s. depressae, ovario sine stylopodio, globoso-depresso, capsula membranacea, e flavo virescente:

α. Corolla capsulam maturam calyptrae instar obtegente:

*) Stylis ovarium aequantibus:

*13. *C. Cephalanthi* (s. *tenuiflora*) E.

**) Stylis ovario longioribus:

14. *C. americana* L.
*15. *C. cuspidata* E.

β. Corolla ad basin capsulae persistente:

*) Stylis ovarium aequantibus:

*16. *C. pentagona* E.
*17. *C. Polygonorum* (s. *chlorocarpa*) E.
*18. *C. umbellata* Torr. (aus dem Felsengebirg, ob identisch mit der von Humboldt so benannten aus Neuspanien, ist noch zweifelhaft).
*19. *C. verrucosa* E.

**) Stylis ovario multo longioribus:

*20. *C. californica* Chois.

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b. Phaeocarpae s. umbonatae, ovario stylopodio coronato, plus minusve umbonato vel rostrato, capsula brunnea, firmiore:

α. Corolla membranacea, marginibus integris:

*) Calyce gamosepalo, bracteis paucis remotis suffulto:

*21. *C. vulgivaga* E.
*22. *C. Saururi* E.
*23. *C. rostrata* Shuttlew.
24. *C. bonariensis* Hort.
25. *C. chilensis* Bot. Reg.
26. *C. suaveolens* Ser. (*hassiaca* Pf.)

**) Calyce 5-sepalo, bracteis sepaloideis, pluribus suffulto:

*27. *C. glomerata* Chois.
*28. *C. compacta* Juss.
*29. *C. adpressa* E.

β. corolla carnosa, margine crenulata.

*30. *C. Coryli* (s. *crenulata*) E.
*31. *C. neuropetala* E.
*32. *C. hispidula* E.

Die vorstehende Uebersicht enthält blos diejenigen Arten, welche von Engelmann selbst untersucht worden; alle ihm noch nicht durch eigene Untersuchung oder nur aus unvollständigen Exemplaren bekannten sind nicht aufgeführt. Welchen Zuwachs an genau unterschiedenen Cuscuten Nordamerika durch Engelmann's Bemühungen in den letzten Jahren erhalten hat, ergiebt sich aus der Vergleichung von Engelmann's *Monographie der nordamerikanischen Cuscuten* in Sillimann's Am. Journal. Vol. XLIII. (1842.) p. 333 et s. mit den in obiger Aufzählung vorkommenden (durch ein Sternchen bezeichneten) in Nordamerika einheimischen Arten. In der erwähnten Monographie sind mit Einschluss von *Lepidanche*, welche Gattung Engelmann jetzt wieder mit *Cuscuta* vereinigt hat, 8 Arten beschrieben, während die hier gegebene Uebersicht deren 16 enthält. Von südamerikanischen Cuscuten, die an Zahl die nordamerikanischen wahrscheinlich noch weit übertreffen, konnten wegen mangelhaften Materials nur wenige aufgeführt werden. Alle bisher bekannt gewordenen amerikanischen Cuscuten gehören in die Abtheilung derer mit kopfförmigen Narben; nach Choisy würde von dieser Regel *C. micrantha* Chois. aus Chili, welche in Choisy's Monographie und De Candolle's Prodromus in der Abtheilung der Cuscuten mit verlängerten, fadenförmigen oder keulenförmigen Narben vorkommt, eine Ausnahme machen, allein Choisy's eigene Abbildung zeigt kopfförmige Narben. Auch die Cuscuten Australiens haben alle kopfförmige Narben. Uebrigens sind einige der europäischen Cuscuten mit verlängerten Narben in Amerika eingewandert, so namentlich *C. Epilinum*.

2.

Bemerkungen über einzelne Arten aus der Engelmann'schen Tabelle der Cuscuten.

Die nachfolgenden Bemerkungen sind zum Theil gleichfalls aus Engelmann'schen Briefen, zum Theil aus der von G. Engelm. und Asa Gray im Boston Journal of natural hist. Vol. V. (1845) publicirten *Enumeration of* Lindheimer's *Collection of Texan plants*, einem Kataloge, der zahlreiche wissenschaftliche Bemerkungen und Beschreibungen vieler neuer Pflanzenarten enthält, entnommen.

C. astyla E. in lit. wurde von Hohenacker in Georgien gesammelt und vom Reiseverein als *C. monogyna* ausgegeben, unter welcher Art sie auch Choisy begreift. Die Blüthen sind nur halb so gross als bei *C. monogyna*, die Röhre der Krone den Kelch kaum überragend, die Lappen der Corolle gekerbt (nicht ganz ganzrandig), die Staubfäden fast fehlend, die Antheren oval-dreieckig (nicht linienförmig), die verbundenen Narben fast sitzend, die Kapsel elliptisch, stumpf (nicht kegelförmig). Bei *C. astyla* entspringen die Filamente wie gewöhnlich aus dem Schlundrand, während *C. monogyna* vor allen andern Cuscuten sich dadurch auszeichnet, dass die Filamente unterhalb des Schlundrandes aus der Röhre selbst sich ablösen.

C. europaea. Eine von Poiteau auf St. Domingo gesammelte und von G. Godet aus dem Neuenburger Herbarium unter dem Namen „*C. americana*" zur Untersuchung mitgetheilte Cuscute ist nichts weniger als die ächte Linné- und Jacquin'sche *C. americana* der westindischen Inseln, sondern nach Engelmann's Dafürhalten eine wahrscheinlich eingewanderte üppige tropische Form der *C. europaea*, von der sie blos durch etwas grössere Blüthen und doppelt so grosse Samen etwas abweicht. Die in Sieber's Flor. martin. No. 91. gegebene ist die ächte *C. americana*.

C. arabica Fresen. Dazu gehört auch *C. brevistyla* A. Braun, vom Reiseverein in der dritten Abtheilung der von Schimper in Abyssinien gesammelten Pflanzen unter N. 1486. ausgegeben. Die Blüthen sind etwas kleiner als bei der von demselben Reisenden am Sinai gesammelten, die Exemplare reifer, daher das etwas verschiedene Ansehen.

C. cupulata caule capillaceo; glomerulis multifloris, capitatis, sessilibus; floribus arcte sessilibus, pentameris; calycis campanulati, cupulati lobis transversim ovatis, apice carinatis, abrupte cuspidatis; tubo corollae campanulato, calyce breviore, lacinias limbi ovatas, acutiusculas, erectas, demum pa-

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tentes aequante; staminibus limbo brevioribus, filamentis filiformibus, antheris orbicularibus; squamulis truncatis, apice fimbriatis, convergentibus; stylis cum stigmatibus ovarium globoso-depressum duplo superantibus, apice divergentibus; stigmatibus stylorum longitudine; corolla circum capsulam globosam circumscissam marcescente. E. in lit.

Diese, der *C. Epithymum* näher als der *C. europaea* verwandte Art, wurde von Godet am Caucasus, von Ledebour am Altai gesammelt. Choisy begreift sie mit Unrecht unter *C. major*.

C. ciliaris Kotschy (von Mossul). Es ist unbegreiflich, wie Choisy diese Art mit *C. pedicellata* Ledb. vereinigen kann, von der sie gänzlich, selbst der Abtheilung nach, der sie angehört, verschieden ist. *C. ciliaris* hat nämlich kopfförmige Narben und ist unter allen asiatischen Arten dieser Abtheilung die am weitesten nach Westen reichende.

C. Cephalanthi E. in Sill. Journ. XLIII. Ausgezeichnet durch meist 4zählige Blüthen und stumpfe Lappen des Kelches und der Krone. Da sie nicht blos an *Cephalanthus*, sondern auch an *Boehmeria*, *Vernonia*, *Aster* und andern Compositis gefunden wird, so hat Engelmann später den Namen in *C. tenuiflora* abzuändern vorgeschlagen. Von Choisy mit Unrecht für identisch mit *C. compacta* gehalten.

C. cuspidata caule filiformi, ramosissimo; floribus pedunculatis in cymas laxas bracteosas dispositis 5fidis; tubo corollae cylindrico sepala usque ad basin libera ovata concava (exteriora cuspidata) et lacinias limbi ovatas acutiusculas uninervias erectas s. patentes superante; staminibus limbo brevioribus; squamis ovatis fimbriatis tubum subaequantibus; stylis filiformibus ovario (minuto) globoso pluries longioribus; capsula globosa corolla marcescente obtecta. E. in plant. Lindh. p. 16., woselbst eine var. *α. pratensis* und *β. humida* unterschieden wird. Von Lindheimer in Texas gesammelt, an *Tephrosia*, *Bradburia*, *Liatris*, *Iva* und *Ambrosia* schmarotzend.

C. pentagona E. in Sill. Journ. XLIII. Dazu, nicht zu *C. vulgivaga*, gehört nach den von Shuttleworth mitgetheilten, mit Beyrich'schen Originalen verglichenen Exemplaren aus Florida und Virginien, *C. arvensis* Beyr. Die Blüthen sind 5-zählig, der Kelch 5kantig mit kreisförmigen Lappen, die Lappen der Blumenkrone spitz.

C. Polygonorum E. in Sill. Journ. XLIII. von der vorigen durch meist 4zählige Blüthen und sehr stark abstehende spitzige Lappen des Kelchs und der Blumenkrone verschieden, so wie durch pomeranzengelbe Stengel, die sie blos mit *C. Saururi* gemein hat.

C. verrucosa E. in Sill. Journ. XLIII., wo sie jedoch noch mit *C. hispidula* E. verbunden ist. Bisher blos in Texas (von Lindheimer) gefunden. Die Blüthen 5zählig, die Kelchlappen warzig, etwas spitz, die Röhre der Blumenkrone fast kugelig, die Lappen zugespitzt.

C. vulgivaga E. in Sill. Journ. XLIII. Die gemeinste und weit verbreitetste Art der vereinigten Staaten, daher wohl auch die *C. americana* der meisten nordamerikanischen Floristen. Sie ist sehr polymorph; Engelmann's var. *β. glomerata* entspricht *C. Gronovii* Willd. Chois. Charakteristische Merkmale sind 5zählige (in einer seltneren Varietät 4zählige) Blüthen; breit eyförmige, stumpfe Kelchlappen; kugelig-glockige Blumenkrone mit breit eyförmigen, stumpfen Lappen; kugelige Kapsel.

C. Saururi E. in Sill. Journ. XLIII. ist der vorigen, mit der sie Choisy vereinigt, zwar sehr nahe verwandt, aber nach E.'s Ueberzeugung specifisch verschieden. Die Lappen des Kelchs und der Corolle sind schmäler, länglich, aber gleichfalls stumpf. Sie findet sich hauptsächlich in der Gegend von St. Louis gewöhnlich an *Saururus*.

C. rostrata (Shuttlew. in coll. Rugel.) caule ramoso; floribus pedunculatis cymoso-umbellatis 5-partitis; tubo corollae globoso-campanulato calycis segmenta ovata obtusa leviter crenulata et lacinias limbi ovatas obtusas patentes (demum reflexas) duplo superante; staminibus limbum subaequantibus; squamis fimbriatis (convergentibus?) basi inter se connatis; stylis filiformibus ovarium stylopodio ejusdem longitudinis coronatum pyriforme subaequantibus; corolla marcescente ad basin capsulae (maximae) acutatae persistente. E. in plant. Lindh. pag. 17. in nota. Diese im reifen Zustand an der grossen, fast schnabelartig verlängerten, spitzen Kapsel leicht zu erkennende Art ist gleichfalls mit *C. vulgivaga* sehr nahe verwandt. Sie wurde von Buckley 1842 an verschiedenen Localitäten der Alleghany-Gebirge von Virginien bis Süd-Carolina, von Rugel 1841 in Nord-Carolina gesammelt, an *Aster*, *Rudbeckia*, *Urtica*, *Rubus* und andern Pflanzen. Engelmann hatte sie vor Ausgabe der Rugel'schen Sammlung in brieflichen Mittheilungen mit dem Namen *C. oxycarpa* bezeichnet.

C. bonariensis. Unter diesem Namen wird in den europ. Gärten (so namentlich im botan. Garten von Carlsruhe) eine Art kultivirt, welche nach E. der *C. vulgivaga* sehr nahe steht, sich aber etwas unterscheidet durch grössere Drüsigkeit, mehr walzenförmige Röhre der Corolle, die die reife Frucht haubenartig bedeckt, nicht an der Basis zurückbleibt. Wer ist der Autor dieser Art? Giebt der Name das

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vollständige Flor, sondern nur ein Paar Notizen über dieselbe und fügt am Schluss hinzu, dass John Wynne Esq., welcher die irische Flor schon durch die Entdeckung von *Saxifraga nivalis* bereichert habe, nun *Arabis petraea* und die wahre *Saxifraga pedatifida* Ehrh. gefunden habe. Der Vf. selbst habe in diesem Jahre *Arabis stricta* und *Draba rupestris* hinzugefügt.

Verkauf europäischer und anderer Moose, b. W. P. Schimper in Strasburg. S. 571. Sammlungen, welche meistens europäische Arten enthalten, und wie Drummond's amerikan. Moose eingerichtet sind, sollen 8 L. Sterl. kosten, zwei viel reichere, mit allen europäischen Formen und 200 exotischen Arten, von denen 100 neu oder unbeschrieben sind, jede zu 15 L. Sterl.

Nachricht von Mr. Bridges *in Bolivia, datirt von Cochabamba d. 3. April* 1845. S. 571—577. Er beschreibt in diesem Briefe seine Reise vom Hafen Cobija über Potosi und Chuquisaca nach Cochabamba, überall Pflanzen, Vögel und Insecten sammelnd. Von dem letzten Ort aus wollte er nun die Provinzen Moxos und Santa Cruz de la Sierra besuchen.

Bemerkungen über die Mimoseae mit einer Synopsis der Arten, von Georg Bentham, Esq. (Fortsetz.) S. 577—622. Es folgt nun die Gattung *Inga* Mart., d. h. die Inga-Arten von Willdenow und Decandolle mit einfach paarig-gefiederten Blättern, sie zerfällt in 5 Sectionen: 1. *Leptinga*, racemi umbellaeformes, receptaculo subgloboso, pedicellis elongatis. Flores parvi glabri v. tenuiter puberuli; 14 Arten, welche wir hier nicht anführen wollen, da das Walpers'sche Repertorium sie doch alle in dem nächsten Hefte des 5ten Bandes aufnehmen muss. 2. *Diadema*, flores in capitulo globoso longe pedunculato sessiles v. rarius breviter pedicellati parvi tenues glabri. Petioli nudi v. rarius angustissime marginati. Glandulae parvae v. obsoletae; 8 Arten. 3. *Burgonia*: Spicae cylindricae. Fl. parvi numerosi glabri v. pilis brevissimis leviter puberuli. Calyx campanulatus, corolla pluries brevior. Petioli nudi v. saepius anguste alati. Glandulae sessiles scutellatae v. pezizaeformes. Spicae vulgo axillares solitariae v. fasciculatae, breviter pedunculatae 1—3 poll. Fl. sessiles vix unquam 3 lin. superant. Bracteae minutae; 14 Arten. 4. *Pseudinga*: Spicae ovatae densae v. longiores basi laxae v. interruptae. Fl. sessiles v. rar. brevissime pedicellati. Cal. tubulosus v. anguste tubuloso-campanulatus. Cor. speciebus paucis exceptis villosa. Legum. planum marginibus elevatis latitudine leguminis multo angustioribus; 51 Arten werden hier unter 6 verschiedene Abtheilungen untergebracht. 5. *Euinga*: Spicae ovatae

densae v. saepius longiores basi laxae v. interruptae interdum pauciflorae. Cal. tubulosus v. tubuloso-campanulatus quam in Pseudingis fere semper latior. Cor. villosa. Leguminis margines valde dilatati, sulcato-incrassati, latitudine (transversali) leguminis facies aequantes v. superantes. Pet. alatus v. rarissime apterus. Gland. scutellaeformes v. rarius turbinatae. Fl. majusculi nunc maximi absque staminibus $^1/_2$—2 poll. longi. Cal. striatus glaber v. pilosulus v. tomentosus. Leg. tetragonum v. subteres plurisulcum marginibus demum facies fere omnino obtegentibus; 42 Arten. Dann folgen noch zweifelhafte oder zu andern Gattungen gehörende Arten.

Beiträge zu einer Flora von Süd-Amerika. Aufzählung der von Sir R. Schomburgk *im Brit. Guiana gesammelten Pflanzen.* Von G. Bentham. (Forts.) S. 622—637. Es gehen diese Pflanzen von No. 847—880. und umfassen die Familien der Polygoneen, der Thymelaeen und der von Nees bearbeiteten Acanthaceen. Zu den Polygoneen gehören als neue Arten: *Coccoloba grandis*, *excelsa*, *perimensis*, *marginata*, *striata*, *ovata*, *lucidula*, *Triplaris Schomburgkiana*, *Ruprechtia tenuiflora*, *brachystachya* u. *Symmeria paniculata*, eine neue Gattung, ein Baum mit dioecischen Blumen, 6theiligem Perigon, zahlreichen Staubgefässen und dreieckigen Fruchtknoten mit 3 sitzenden Narben, welcher von den innern stark blattartig-häutig auswachsenden Perigonialtheilen bei der Frucht bedeckt wird. Unter den Thymelaeen sind zwei neue Gattungen *Lariadenia* und *Goodallia*, die erstere mit röhrigem, oben 5theiligen, schuppenlosen Perigon, 10 Staubgefässen, 5 kleinen hypogynen Schüppchen, dünnem Griffel, der eine dicke kopfförmige, mit 10 papillosen senkrechten Rippen versehene Narbe trägt. Frucht unbekannt. *L. rupestris*, ein Strauch. *Goodallia* hat dioecische Blumen, ein röhriges 5spaltiges, innen zottiges und nahe am Grunde 10 linealische kahle perigyne Schuppen tragendes Perigon, 10 Staubgefässe; in der weiblichen Blume sehr kleine lang steifhaarige hypogyne Schüppchen. Griffel kurz, oben mit dicker kopfiger, überall papillöser Narbe. Frucht kaum fleischig, vom wenig auswachsenden Perigon umschlossen, steifhaarig mit hängenden Samen ohne Eyweiss. Ein Strauch: *G. guianensis*. Unter den Acanthaceen sind: *Hygrophila guianensis*, *Stemonacanthus Humboldtianus*, *Dipteracanthus canescens*, *Thyrsacanthus Schomburgkianus*, *Beloperone Schomburgkiana* und *B.? calycina* neue Arten.

Beschreibung dreier neuen Pflanzen aus Oberindien, gesammelt von Dr. Thos. Thomson und Dr. Bacon. S. 637—639. T. 20. 21. 22. Diese drei Pflanzen sind: *Gentiana* (*Chondrophyllum*) *cepha-*

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lodes Edgew. (in Linn. Soc. Trans. ined.) auf T. 20. unter dem Namen *G. Baconi* abgebildet, aus Nepal und vom Himalaya in einer Höhe von 5000′. *Saxifraga diversifolia* Wall. Taf. 21. aus Kamaon von Bacon gesammelt. *Cicendia Roxburghii* Gris., von Mooredabad in Oberindien von Thomson gesammelt, aus dessen Herbar alle 3 entnommen sind.

(*Schluss folgt.*)

Sammlungen.

Flora Galliae et Germ. exsicc. Cent. V. et VI. (Auszug aus d. Archives d. Bot.) Fortsetzung s. bot. Zeit. 1845. Sp. 665 ff.

Die in der Flora Jan. 1841 vom Verf. publicirten Bemerkungen über *Carex fulva* et *Hornschuchiana* sind von Billot übersetzt und folgen nun. Er nennt darin die Art *C. biformis* und hat 2 Var. *α. fertilis* (Hornsch. Hoppe u. *C. fulva* Schk. tab. T. f. 67. planta sinistra) — *β. sterilis* (*fulva* Good. et Schk. l. c. pl. dextra). Er bemerkt dabei, dass es bemerkenswerth sei, dass bei den Diagnosen der *Carex* auf den Samen keine Rücksicht genommen werde, während man ihn bei *Scirpus* so sehr beachte, wahrscheinlich werde man später noch mehr Arten bei genauerer Untersuchung der Samen vereinen.

Ranunculus paucistamineus Tausch wird von J. B. Drouet im Wasser und am Ufer beschrieben.

Ueber eine Aeusserung von Reichenbach wegen seiner Ansicht über *Rh. major* Ehrh. und dessen Varr. lässt sich der Verf. sehr bitter aus, indem er Versuche anführt, wo durch Aussaat des *Rh. glaber* mit breitgerandeten Samen von feuchten Wiesen auf sandigen trocknen Roggenäckern *Rh. hirsutus* mit fast ungeflügeltem Samen entstanden sei und giebt folgende Diagnosen:

Rhinanthus major Ehrh. Beitr. 6. 144. bracteis decoloribus pallidis, superior. inciso-serratis, dentibus subulatis cuspidatis, labiis cor. porrectis, tubo subcurvato, dente in utroque latere labii sup. ovato, fol. oblongo-lanceolatis.

α. glaber, cal. glabro, seminum alis dimidio semine latioribus (*R. glaber* Lam.). In pratis humidis et paludosis praecipue solo arenoso-turfoso.

β. hirsutus, cal. villoso, seminum alis dimidio semine latioribus (*Rh. hirsutus* Lam.). In pratis et agris solo argilloso et calcareo.

γ. subexalatus, cal. villoso, seminum alis semine ipso triplo angustioribus (*R. Alectorolophus* Poll.). Inter segetes Secalis praecipue solo arenoso.

Der dritte Bogen der Archives beginnt mit der Skizze einer Arbeit über die Gattung *Astrocarpus*, Fragment einer Monographie der Resedaceen von J. Gay. Es sind 2 Arten: *A. sesamoides* Gay (*Reseda ses.* L., Gouan, W. nebst *Astr. ses. α. stellata* Duby) und *A. Clusii* Gay (*Sesamoides* etc. Clus. Hist. p. 296. ic., Tourn. Inst. p. 124., *Reseda canescens* L. et Asso non Vahl nec aliorum, *R. purpurascens* L., W., Poir., Brot.; *R. sesamoides* All., Poir., DC. non L.; *R. Clusii* Spr., *Astroc. ses. β. purpurascens* Duby) mit einer Var. *β. spathulaefolius* (*Astr. sesamoides* Salis, *R. sesam. β. spathulata* Moris).

Dann folgen neue Pflanzen in Frankreich und Deutschland von F. G. Schultz gefunden und zum Artenrang erhoben. *Cirsium bipontinum*, früher vom Verf. *C. oleraceo-lanceolatum* genannt, sehr schwer von *C. Lachenalii* Koch zu unterscheiden durch breitere weniger eingeschnittene Blätter, grüne, viel breitere und mit stärkeren Stacheln bewehrte Involucralblätter; ist von demselben vielleicht nur Var., doch kommt es nur auf einer Wiese bei Zweibrücken mit *C. oleraceum* und *lanceolatum* vor, und würde, wenn es zu *C. Lachenalii* gehört, beweisen, dass dies kein Bastard sei. — *Hieracium Schultesii* kommt mit *H. Pilosella* und *Auricula* bei Bitsch vor und war früher für einen Bastard dieser beiden vom Verf. erklärt. Unterscheidet sich von *H. stoloniflorum* und *bifurcum* durch stumpfe Blätter, durch sterile wurzelnde, niemals aufrechte blühende Stolonen und von *bifurcum* noch durch zweifarbige Randblumen.

Zu der ersten Centurie seiner Flora Galliae et Germ. exsicc. giebt der Verf. ein neues Inhaltsverzeichniss mit Verbesserungen, gleichsam eine 2te Auflage, und spricht dann über das Vorkommen der *Anemone vernalis*; diese nordische Pflanze findet sich im Centrum Europa's ausser auf den Alpen am Rande der Gletscher nur an wenigen Orten, nämlich an einigen Flüssen, welche von den Tyroler Alpen kommen, wie an der Isar, dann im Jurakalk und Grünsandstein bei Regensburg, ferner an zwei sehr beschränkten Localitäten bei Hochspeier und Kaiserslautern, wo Pollich und Koch sie fanden, und andern, wo der Verf. sie fand, so wie in Lothringen und dem Elsass. Alle diese Localitäten befinden sich auf der Formation des Vogesen-Sandsteins auf dem Kamme, welcher die Wasserscheide der nach Osten in die Sarre und nach Westen in den Rhein fliessenden Gewässer bildet, in Haiden und Wäldern von Birken und Kiefern zwischen *Hypnum*, *Dicranum spurium* etc., an einigen Orten mit *Daphne Cneorum*.

Die Veilchen der Abtheilung *Canina* theilt der Verf. nach Anleitung eines ihm von C. Schimper mitgetheilten Factums folgendermassen ein: A. Haupt-

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achse setzt sich in eine sterile Blattrosette fort und von dieser ausdauernden Hauptachse kommen als Secundärachsen die Seitenstengel, welche in den Blattachseln die blühenden Blumenstiele tragen. 1. *Viola arenaria* DC. (var. flor. lacteis). 2. *V. sylvestris* Lam. et v. β. *Riviniana*. B. Hauptachse verlängert sich in einen Stengel, welcher am Ende des Sommers fast bis zur Basis nebst den folgenden Stengeln abstirbt. a) Das Rhizom treibt keine Stolonen. 3. *V. canina* L. (*Ruppii* All.). 4. *V. lancifolia* Thore. b) Das Rhizom treibt unterirdische Stolonen, welche eine neue Pflanze geben. α. longicalcaratae, der Sporn doppelt so lang als die Anhängsel des Kelchs. 5. *Viola Schultzii* Billot (*Rnppii* Rchbach.). β. brevicalcaratae, der Sporn so lang oder kaum länger als die Kelchanhängsel. 6. *V. stricta* Horn. (*Ruppii* Koch syn.). 7. *V. elatior* Fries. 8. *V. stagnina* Kit. β. Billotii stipulis majoribus (*V. Billotii* Schultz), kleinere Individuen dieser Pflanze sind *V. pumila* Mut. fl. fr. tab. supp. 1. f. 1. (nicht v. Chaix u. Villars) und grössere sind *V. pratensis* Mut. l. c. f. 2. (nicht Mertens u. Koch). 9. *V. pumila* Chaix in Vill. Dauph. (*pratensis* Mert. u. Koch). Dass diese letztere Synonymie richtig sei, bewährt der Verf. noch durch die Ueberzeugung anderer, welche diese Pflanzen sammelten, sie ist in der Gegend um Gap (Hautes Alpes) eben so häufig als an den Ufern des Rheins.

Die neue, schon 1836 von Schultz *Soleirolii* genannte *Gagea* (in Mut. fl. fr. 3. p. 298. t. 73. f. 547. u. Fl. Gall. et Germ. exs.) ist von Tausch *G. corsica* in der Flora von 1841 genannt worden, der Verf. giebt wieder eine Diagnose.

Es folgen nun einige auf seine Sammlung bezüglichen Notizen und es schliesst der Bogen mit einer Uebersetzung einer Lebensbeschreibung von Jul. Herm. Schultes und ein Paar Anzeigen wegen der ferneren Herausgabe seiner botan. Unternehmungen, welche durch den Tod seines einzigen erwachsenen Sohnes eine Unterbrechung erlitten hatte.

S—l.

Kurze Notizen.

In den bayer. gel. Anzeig. No. 239. wird eine vom Hrn. Dr. Guyon, Chirurg. en chef der afrikanischen Armee, eingesandte Notiz über die Ursache der Unfruchtbarkeit der Dattelpalme in Algier und andern Punkten der Küste von Algerien mitgetheilt, worin derselbe sagt, dass die bei Algier vorkommenden, aber wie in den dattelreichen innern Gegenden (Biscara), zum grössten Theil weiblichen Dattelbäume zwar alle Jahr blühen und Früchte tragen, aber keine keimfähigen Kerne erzeugen und dass der Grund nach Angabe der Araber darin liege, dass eine künstliche Befruchtung nicht statt finde, wie dies überall da geschehe, wo die Einwohner diese Bäume allgemein benutzen. Auffallend sei es jedoch, dass im südlichen Spanien die Datteln Frucht bringen, wie z. B. der Werth der Dattelerndte in den Palmenwäldern von Elche, von Laborde durchschnittlich auf 100,000 Fr. angegeben werde. Der Hr. Classensecretair bemerkt dazu, dass vielleicht alle sogenannten wilden Dattelpalmen von Syrien und Nordafrika nur verwildert sein möchten und dass das Vaterland dieser Culturpflanze vielleicht eben so wenig gekannt sei, als das anderer Nutzpflanzen, doch seien in Beziehung auf die Dattel die Gegenden an dem persischen Meerbusen und in Babylonien noch nicht gehörig untersucht. Ref. scheint der Grund der Erscheinung einfach darin zu liegen, dass Pflanzen, welche auf andre Weise als durch Samen sich vermehren können, häufig gar keinen oder weniger reifen Samen erzeugen; dies mag um so mehr bei der Dattel der Fall sein, da die Befruchtung noch durch Trennung der Geschlechter erschwert wird. Bei der Cultur wird ja auch sorgfältig darauf geachtet, alle diese Stockausschläge und Wurzelausläufer hinwegzunehmen, wie der alte Kämpfer schon anführt.

Die Frauen der Ostiaken verfertigen aus der Brennnessel ein Gewebe, das an Stärke die russische Leinwand übertreffen soll. Sie färben das Garn mit rothen und grünen Farben, die sie aus den Wurzeln gedachter Brennnesseln bereiten. So erzählt Castren in seinen Reise-Skizzen aus Nordost-Sibirien, und wir fragen, was ist das für eine Brennnessel, welche die Gewebe und die Farben zu den Geweben liefert.

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Ea 249

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Inhalt. **Orig.:** Engelmann u. Al. Braun Bemerk. üb. Cuscuten. — Schimper üb. Rüppel's Ansicht von d. Netzrelieffen b. d. Hildburghäuser Thierspuren. — Ders. Floratio, Florescentia et Inflorescentia. — **Lit.:** Hooker the Lond. Journ. of Bot. 1845. — **Samml.:** Flor. Gall. et Germ. exs. V. VI. — **K. Not.:** Unfruchtbarkeit der Dattelpalme in Algier. — Brennnessel b. d. Ostiaken. — Pflanzenverkauf in Paris.

Bemerkungen über Cuscuten

von Georg Engelmann, mitgetheilt von Alexander Braun.

Da die Cuscuten, ungeachtet des vielseitigen Interesses, welches sie bieten, zu den verhältnissmässig noch wenig gekannten Pflanzen gehören, indem selbst über die in Deutschland vorkommenden Arten die Akten noch lange nicht geschlossen sind, so scheint es mir nicht unzweckmässig, einige Bemerkungen über diese Gewächse zur Oeffentlichkeit zu bringen, welche mir mein Freund Engelmann in St. Louis in seinem letzten Briefe mitgetheilt hat. Ich werde denselben später einige eigene Beobachtungen anhängen, durch welche ich zur Naturgeschichte der Arten der deutschen Flora einige Beiträge zu liefern hoffe.

1.

Natürliche Anordnung der Arten der Gattung *Cuscuta* nach G. Engelmann (Juli 1845).

I. Cuscutae stigmatibus elongatis, capsulis circumscissis:

A. Ovario conico, stylis coalitis:

a. Stylis omnino coalitis:

1. *C. monogyna* Vahl.
2. *C. astyla* E.

b. Stylis basi coalitis:

3. *C. macrantha* Don.
4. *C. pedicellata* Ledeb.

B. Ovario globoso, stylis a basi distinctis:

a. Ovario majore, stigmatibus cum stylis brevioribus ovarium aequantibus vel eo brevioribus:

5. *C. Epilinum* Weihe.
6. *C. europaea* Auct. (*major* C. Bauh. Chois.)
7. *C. arabica* Fresen.

Anmerk. In diese Abtheilung gehören noch mehrere Formen aus dem südlichen Europa und von

den canarischen Inseln, deren specifische Charaktere noch nicht hinreichend ausgemittelt sin[illegible]

b. Ovario minore, stigmatibus cum stylis aequantibus ovario multo longioribus:

8. *C. Epithymum* Sm. (*minor* C. Bauh. Chois.)
9. *C. cupulata* E.
10. *C. planiflora* Tenore (vorausgesetzt, dass die im südlichen Tyrol auf *Colutea* wachsende Art wirklich diese ist).

II. Cuscutae stigmatibus capitatis, capsulis indehiscentibus (baccatis):

A. *Gerontogeae*: (Die Mehrzahl derselben ist noch nicht hinreichend untersucht, um unter die amerikanischen Arten am rechten Orte eingereiht zu werden; hierher z. B.)

11. *C. ciliaris* Kotschy.
12. *C. sulcata* Roxb.

B. *Americanae*:

a. Chlorocarpae s. depressae, ovario sine stylopodio, globoso-depresso, capsula membranacea, e flavo virescente:

α. Corolla capsulam maturam calyptrae instar obtegente:

*) Stylis ovarium aequantibus:

*13. *C. Cephalanthi* (s. *tenuiflora*) E.

**) Stylis ovario longioribus:

14. *C. americana* L.
*15. *C. cuspidata* E.

β. Corolla ad basin capsulae persistente:

*) Stylis ovarium aequantibus:

*16. *C. pentagona* E.
*17. *C. Polygonorum* (s. *chlorocarpa*) E.
*18. *C. umbellata* Torr. (aus dem Felsengebirg, ob identisch mit der von Humboldt so benannten aus Neuspanien, ist noch zweifelhaft).
*19. *C. verrucosa* E.

**) Stylis ovario multo longioribus:

*20. *C. californica* Chois.

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b. Phaeocarpae s. umbonatae, ovario stylopodio coronato, plus minusve umbonato vel rostrato, capsula brunnea, firmiore:

α. Corolla membranacea, marginibus integris:

*) Calyce gamosepalo, bracteis paucis remotis suffulto:

*21. *C. vulgivaga* E.
*22. *C. Saururi* E.
*23. *C. rostrata* Shuttlew.
24. *C. bonariensis* Hort.
25. *C. chilensis* Bot. Reg.
26. *C. suaveolens* Ser. (*hassiaca* Pf.)

**) Calyce 5-sepalo, bracteis sepaloideis, pluribus suffulto:

*27. *C. glomerata* Chois.
*28. *C. compacta* Juss.
*29. *C. adpressa* E.

β. corolla carnosa, margine crenulata.

*30. *C. Coryli* (s. *crenulata*) E.
*31. *C. neuropetala* E.
*32. *C. hispidula* E.

Die vorstehende Uebersicht enthält blos diejenigen Arten, welche von Engelmann selbst untersucht worden; alle ihm noch nicht durch eigene Untersuchung oder nur aus unvollständigen Exemplaren bekannten sind nicht aufgeführt. Welchen Zuwachs an genau unterschiedenen Cuscuten Nordamerika durch Engelmann's Bemühungen in den letzten Jahren erhalten hat, ergiebt sich aus der Vergleichung von Engelmann's *Monographie der nordamerikanischen Cuscuten* in Sillimann's Am. Journal. Vol. XLIII. (1842.) p. 333 et s. mit den in obiger Aufzählung vorkommenden (durch ein Sternchen bezeichneten) in Nordamerika einheimischen Arten. In der erwähnten Monographie sind mit Einschluss von *Lepidanche*, welche Gattung Engelmann jetzt wieder mit *Cuscuta* vereinigt hat, 8 Arten beschrieben, während die hier gegebene Uebersicht deren 16 enthält. Von südamerikanischen Cuscuten, die an Zahl die nordamerikanischen wahrscheinlich noch weit übertreffen, konnten wegen mangelhaften Materials nur wenige aufgeführt werden. Alle bisher bekannt gewordenen amerikanischen Cuscuten gehören in die Abtheilung derer mit kopfförmigen Narben; nach Choisy würde von dieser Regel *C. micrantha* Chois. aus Chili, welche in Choisy's Monographie und De Candolle's Prodromus in der Abtheilung der Cuscuten mit verlängerten, fadenförmigen oder keulenförmigen Narben vorkommt, eine Ausnahme machen, allein Choisy's eigene Abbildung zeigt kopfförmige Narben. Auch die Cuscuten Australiens haben alle kopfförmige Narben. Uebrigens sind einige der europäischen Cuscuten mit verlängerten Narben in Amerika eingewandert, so namentlich *C. Epilinum.*

2.

Bemerkungen über einzelne Arten aus der Engelmann'schen Tabelle der Cuscuten.

Die nachfolgenden Bemerkungen sind zum Theil gleichfalls aus Engelmann'schen Briefen, zum Theil aus der von G. Engelm. und Asa Gray im Boston Journal of natural hist. Vol. V. (1845) publicirten *Enumeration of* Lindheimer's *Collection of Texan plants*, einem Kataloge, der zahlreiche wissenschaftliche Bemerkungen und Beschreibungen vieler neuer Pflanzenarten enthält, entnommen.

C. astyla E. in lit. wurde von Hohenacker in Georgien gesammelt und vom Reiseverein als *C. monogyna* ausgegeben, unter welcher Art sie auch Choisy begreift. Die Blüthen sind nur halb so gross als bei *C. monogyna*, die Röhre der Krone den Kelch kaum überragend, die Lappen der Corolle gekerbt (nicht ganz ganzrandig), die Staubfäden fast fehlend, die Antheren oval-dreieckig (nicht linienförmig), die verbundenen Narben fast sitzend, die Kapsel elliptisch, stumpf (nicht kegelförmig). Bei *C. astyla* entspringen die Filamente wie gewöhnlich aus dem Schlundrand, während *C. monogyna* vor allen andern Cuscuten sich dadurch auszeichnet, dass die Filamente unterhalb des Schlundrandes aus der Röhre selbst sich ablösen.

C. europaea. Eine von Poiteau auf St. Domingo gesammelte und von G. Godet aus dem Neuenburger Herbarium unter dem Namen „*C. americana*" zur Untersuchung mitgetheilte Cuscute ist nichts weniger als die ächte Linné- und Jacquin'sche *C. americana* der westindischen Inseln, sondern nach Engelmann's Dafürhalten eine wahrscheinlich eingewanderte üppige tropische Form der *C. europaea*, von der sie blos durch etwas grössere Blüthen und doppelt so grosse Samen etwas abweicht. Die in Sieber's Flor. martin. No. 91. gegebene ist die ächte *C. americana.*

C. arabica Fresen. Dazu gehört auch *C. brevistyla* A. Braun, vom Reiseverein in der dritten Abtheilung der von Schimper in Abyssinien gesammelten Pflanzen unter N. 1486. ausgegeben. Die Blüthen sind etwas kleiner als bei der von demselben Reisenden am Sinai gesammelten, die Exemplare reifer, daher das etwas verschiedene Ansehen.

C. cupulata caule capillaceo; glomerulis multifloris, capitatis, sessilibus; floribus arcte sessilibus, pentameris; calycis campanulati, cupulati lobis transversim ovatis, apice carinatis, abrupte cuspidatis; tubo corollae campanulato, calyce breviore, lacinias limbi ovatas, acutiusculas, erectas, demum pa-

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tentes aequante; staminibus limbo brevioribus, filamentis filiformibus, antheris orbicularibus; squamulis truncatis, apice fimbriatis, convergentibus; stylis cum stigmatibus ovarium globoso-depressum duplo superantibus, apice divergentibus; stigmatibus stylorum longitudine; corolla circum capsulam globosam circumscissam marcescente. E. in lit.

Diese, der *C. Epithymum* näher als der *C. europaea* verwandte Art, wurde von Godet am Caucasus, von Ledebour am Altai gesammelt. Choisy begreift sie mit Unrecht unter *C. major*.

C. ciliaris Kotschy (von Mossul). Es ist unbegreiflich, wie Choisy diese Art mit *C. pedicellata* Ledb. vereinigen kann, von der sie gänzlich, selbst der Abtheilung nach, der sie angehört, verschieden ist. *C. ciliaris* hat nämlich kopfförmige Narben und ist unter allen asiatischen Arten dieser Abtheilung die am weitesten nach Westen reichende.

C. Cephalanthi E. in Sill. Journ. XLIII. Ausgezeichnet durch meist 4zählige Blüthen und stumpfe Lappen des Kelches und der Krone. Da sie nicht blos an *Cephalanthus*, sondern auch an *Boehmeria*, *Vernonia*, *Aster* und andern Compositis gefunden wird, so hat Engelmann später den Namen in *C. tenuiflora* abzuändern vorgeschlagen. Von Choisy mit Unrecht für identisch mit *C. compacta* gehalten.

C. cuspidata caule filiformi, ramosissimo; floribus pedunculatis in cymas laxas bracteosas dispositis 5fidis; tubo corollae cylindrico sepala usque ad basin libera ovata concava (exteriora cuspidata) et lacinias limbi ovatas acutiusculas uninervias erectas s. patentes superante; staminibus limbo brevioribus; squamis ovatis fimbriatis tubum subaequantibus; stylis filiformibus ovario (minuto) globoso pluries longioribus; capsula globosa corolla marcescente obtecta. E. in plant. Lindh. p. 16., woselbst eine var. *α. pratensis* und *β. humida* unterschieden wird. Von Lindheimer in Texas gesammelt, an *Tephrosia*, *Bradburia*, *Liatris*, *Iva* und *Ambrosia* schmarotzend.

C. pentagona E. in Sill. Journ. XLIII. Dazu, nicht zu *C. vulgivaga*, gehört nach den von Shuttleworth mitgetheilten, mit Beyrich'schen Originalen verglichenen Exemplaren aus Florida und Virginien, *C. arvensis* Beyr. Die Blüthen sind 5zählig, der Kelch 5kantig mit kreisförmigen Lappen, die Lappen der Blumenkrone spitz.

C. Polygonorum E. in Sill. Journ. XLIII. von der vorigen durch meist 4zählige Blüthen und sehr stark abstehende spitzige Lappen des Kelchs und der Blumenkrone verschieden, so wie durch pomeranzengelbe Stengel, die sie blos mit *C. Saururi* gemein hat.

C. verrucosa E. in Sill. Journ. XLIII., wo sie jedoch noch mit *C. hispidula* E. verbunden ist. Bisher blos in Texas (von Lindheimer) gefunden. Die Blüthen 5zählig, die Kelchlappen warzig, etwas spitz, die Röhre der Blumenkrone fast kugelig, die Lappen zugespitzt.

C. vulgivaga E. in Sill. Journ. XLIII. Die gemeinste und weit verbreitetste Art der vereinigten Staaten, daher wohl auch die *C. americana* der meisten nordamerikanischen Floristen. Sie ist sehr polymorph; Engelmann's var. *β. glomerata* entspricht *C. Gronovii* Willd. Chois. Charakteristische Merkmale sind 5zählige (in einer seltneren Varietät 4zählige) Blüthen; breit eyförmige, stumpfe Kelchlappen; kugelig-glockige Blumenkrone mit breit eyförmigen, stumpfen Lappen; kugelige Kapsel.

C. Saururi E. in Sill. Journ. XLIII. ist der vorigen, mit der sie Choisy vereinigt, zwar sehr nahe verwandt, aber nach E.'s Ueberzeugung specifisch verschieden. Die Lappen des Kelchs und der Corolle sind schmäler, länglich, aber gleichfalls stumpf. Sie findet sich hauptsächlich in der Gegend von St. Louis gewöhnlich an *Saururus*.

C. rostrata (Shuttlew. in coll. Rugel.) caule ramoso; floribus pedunculatis cymoso-umbellatis 5-partitis; tubo corollae globoso-campanulato calycis segmenta ovata obtusa leviter crenulata et lacinias limbi ovatas obtusas patentes (demum reflexas) duplo superante; staminibus limbum subaequantibus; squamis fimbriatis (convergentibus?) basi inter se connatis; stylis filiformibus ovarium stylopodio ejusdem longitudinis coronatum pyriforme subaequantibus; corolla marcescente ad basin capsulae (maximae) acutatae persistente. E. in plant. Lindh. pag. 17. in nota. Diese im reifen Zustand an der grossen, fast schnabelartig verlängerten, spitzen Kapsel leicht zu erkennende Art ist gleichfalls mit *C. vulgivaga* sehr nahe verwandt. Sie wurde von Buckley 1842 an verschiedenen Localitäten der Alleghany-Gebirge von Virginien bis Süd-Carolina, von Rugel 1841 in Nord-Carolina gesammelt, an *Aster*, *Rudbeckia*, *Urtica*, *Rubus* und andern Pflanzen. Engelmann hatte sie vor Ausgabe der Rugel'schen Sammlung in brieflichen Mittheilungen mit dem Namen *C. oxycarpa* bezeichnet.

C. bonariensis. Unter diesem Namen wird in den europ. Gärten (so namentlich im botan. Garten von Carlsruhe) eine Art kultivirt, welche nach E. der *C. vulgivaga* sehr nahe steht, sich aber etwas unterscheidet durch grössere Drüsigkeit, mehr walzenförmige Röhre der Corolle, die die reife Frucht haubenartig bedeckt, nicht an der Basis zurückbleibt. Wer ist der Autor dieser Art? Giebt der Name das

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Vaterland richtig an, so ist sie vielleicht als südamerikanische Varietät oder Subspecies der *C. vulgivaga* zu betrachten.

C. glomerata Chois. *Lepidanche Compositarum* E. in Sill. Journ. XLIII. Auf diese Art hatte E. seine Gattung *Lepidanche* gegründet, welcher später in Hook. Lond. Journ. April 1842 eine 2te Art, *Lep. adpressa*, beifügte. Eine dritte, dieser sehr nahe verwandte Art ist *C. compacta* Juss. Allein die Gattung *Lepidanche* kann nach E.'s neueren Mittheilungen nicht bestehen, da die den Kelch hüllenartig umgebenden, den Kelchblättern ähnlichen (und dadurch mit den eigentlichen Kelchblättern zusammengenommen einen scheinbar 8—10 blättrigen Kelch bildenden) Deckschuppen, welche den hauptsächlichsten Unterschied von den ächten Cuscuten bilden, an Zahl sehr veränderlich sind und in geringerer Anzahl auch schon bei ächten Cuscuten vorkommen. So bildet z. B. die oben beschriebene *C. cuspidata* einen deutlichen Uebergang von den Lepidanchen zu den ächten Cuscuten, indem sich bei ihr bereits bald nur einige, bald mehrere Deckblättchen hüllenartig dem Kelch anschliessen. *C. glomerata* ist den westlichen Prairien eigenthümlich, wo sie die zahlreichen Compositae dieser Region, namentlich *Solidagines*, Helianthen und Vernonien umschlingt, ihre dichtgedrängten Blüthenbüschelchen schlangenartig aneinander reihend. Sie ist besonders ausgezeichnet durch die sparrig abstehenden Deck- und Kelchblätter.

C. compacta Juss. Chois. (exclus. Syn.). Ueber diese Art finden sich Bemerkungen in den plant. Lindh. p. 17., wo folgende Diagnose derselben gegeben wird: C. caule ramoso; floribus sessilibus glomeratis 5partits; sepalis sub-novem leviter crenulatis orbiculatis concavis adpressis, interioribus minoribus; tubo corollae cylindrico calycem et lacinias limbi lineari-oblongas obtusas duplo superante; staminibus limbo brevioribus; squamis pinnatifido-laciniatis; ovario cum stylopodio stylos subaequante; capsula globosa subacuta corolla marcescente obtecta 1—4sperma. In Nord-Carolina und Alabama an *Corylus rostrata*, *Andromeda axillaris* und *Prinos glaber*. Choisy stellt mit Unrecht zwei ganz verschiedene Arten, nämlich *C. Cephalanthi* E. und *Coryli* E. hierher, wogegen die von Choisy zu *C. glomerata β. adpressa* gerechnete *C. coronata* Beyr. nach Exemplaren von Shuttleworth hierher gehört.

C. adpressa E. (*Lepidanche* — E. in Hook. Lond. Journ. l. c.) wird von Choisy als var. *β.* unter *C. glomerata* gestellt, von der sie nicht blos durch die angedrückten Hüll- und Kelchblätter und andere Merkmale, sondern schon im ganzen Habitus sehr verschieden ist; dagegen ist sie sehr nahe verwandt mit der vorausgehenden Art, von der sie sich durch lockere Blüthenknäuel, etwas grössere Blüthen, kürzere, die Kelchblätter nicht überragende Röhre der Corolle unterscheidet. Sie bewohnt blos die Flachländer am Missisippi und Illinois-Fluss (meist an Holzgewächsen, z. B. *Vitis*, *Cornus*, *Bignonia*, *Laurus*, *Rhus* schmarotzend) und bietet somit ein neues merkwürdiges Beispiel von dem Vorkommen analoger, aber doch specifisch verschiedener Arten in den Flachländern der westlichen und den Gebirgsgegenden der südlichen Staaten. Aehnliche Beispiele liefern *Baptisia alba* und *leucantha*, *Phacelia fimbriata*, *Purshii* und andere.

C. Coryli E. in Sill. Journ. XLIII. Sie ist von den vorausgehenden weit verschieden und sehr ausgezeichnet durch die fleischige, im Trocknen weisse Blumenkrone und äusserst kleine Schüppchen, die nur aus 1—2 Zähnchen zu jeder Seite des angewachsenen Theils des Filaments bestehen. Die Blüthen sind 4zählig, die Lappen des Kelchs und der Blumenkrone spitzig. Bisher blos in der Gegend von St. Louis gefunden, wo sie jedoch nicht blos auf *Corylus*, sondern auch auf *Sida*, *Solidago* und andern Pflanzen vorkommt; kultivirt hängte sie sich an *Verbenen*, *Aster*, *Chrysanthemum indicum*, *Phytolacca*, selbst an *Euphorbia* und *Allium* an.

C. neuropetala E. in Sill. Journ. XLV. p. 75. Blüthen 5-zählig; die Lappen des Kelchs und der glockenförmigen Corolle spitz; Schüppchen sehr gross und gewimpert; der Blüthenstand dicht und glatt. Sie wurde von Rugel in Florida, von Lindheimer in Texas gesammelt. In den plant. Lindh. p. 15. sind mehrere Formen dieser Art genauer beschrieben, von denen eine (*C. neuropetala β. minor* E.) sich der folgenden Art so sehr annähert, dass wohl beide in der Folge als glatte und rauhe Abart vereinigt werden müssen, was unter dem Namen *C. porphyrostigma* geschehen könnte, da sämmtliche hierher gehörige Formen sich vor allen andern nordamerikanischen Cuscuten durch die purpurbraunen Narben auszeichnen.

C. hispidula E. in Sill. Journ. XLV. l. c., gleichfalls aus Texas, die kleinste und kleinblüthigste der nordamerikanischen Cuscuten und bis jetzt die einzige Art, welche eine Art von Pubescenz gezeigt hat, wodurch sie sich von der vorausgehenden unterscheidet.

Ich schliesse diese Bemerkungen mit dem Wunsche, dass das Unternehmen meines Freundes, sämmtliche Cuscuten monographisch zu bearbeiten, recht vielfache Unterstützung finden möge, besonders durch Mittheilung von Original-Exemplaren weniger bekannter Arten, oder auch von neuen und

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zweifelhaften Formen. Aus einer kürzlich erhaltenen Nachricht ersehe ich, dass von England aus durch Hooker bedeutende Materialien zu Engelmann's Monographie abgesendet worden sind; was mir von deutschen Botanikern zu diesem Zwecke für Engelmann mitgetheilt werden kann, werde ich fortan, wie bisher, mit Vergnügen an den Ort seiner Bestimmung besorgen.

Carlsruhe, den 20. März 1846.

Einige Worte über Dr. Rüppel's Ansicht, als rührten die Netzrelieffe auf den Hildburghäuser Thierspuren-Platten von Pflanzen her.

Referent kennt die Frankfurter Thierfährten-Platte und hat andere ähnliche an andern Orten, und namentlich die prachtvollste in Stockholm gesehen, auch selbst deren mehrere, worunter eine von bedeutender Dimension für das Strassburger Naturalienkabinet acquirirt, nie war ihm aber der Gedanke gekommen, obgleich eifrigst mit dem Studium der vorweltlichen Flora seit Jahren beschäftigt, in den anastomosirenden Erhabenheiten dieser Platten pflanzliche Gebilde zu sehen, und dies um so weniger, als derselbe genau die nämlichen Gebilde in den Sandsteinen aller Formationen angetroffen und besonders häufig in dem bekanntlich völlig versteinerungslosen Vogesensandstein. Von diesen sind grosse Exemplare der Art im oben genannten Naturalienkabinette zu sehen. Die im bunten Sandstein vorkommenden Pflanzenreste haben weder der Form noch der Erhaltungsweise nach die geringste Aehnlichkeit mit diesen ebenfalls in diesem Gestein häufig sich zeigenden Netzen. Dieselben sind alle entweder durch Eisenhydrat ersetzt oder in Pyritenhaltige Kohle verwandelt, nirgends sind sie vollständig durch Sandsteinmassen vertreten, selbst die dünnwandigen Calamiten nicht. Die Aussenseite der fraglichen Relieffe, selbst der oben abgedeckten, zeigt aber keine Spur von diesen Substanzen. Und gesetzt auch, es wären dies Pflanzen, welche sich ganz wider die bekannten Gesetze durch alle Formationen durch erhalten hätten, wo war ihr Standort? Haben sie sich etwa wie Schwammgebilde oder viel schneller noch, in der kurzen Zeit zwischen Ebbe und Fluth über die ganze trocken gelegte Sand- oder Thonschicht verbreitet? Dies ist doch wohl nicht anzunehmen, am allerwenigsten wenn es „Cereus" Arten oder „Lianen waren! Sind sie von dem festen Lande hergeschwemmt worden? Dann würde man fragen, warum denselben keine andern Pflanzen, deren es im bunten Sandstein, im Keuper, in der Molasse nicht wenige giebt, beigesellt sind, und woher die regelmässige, durchaus horizontale Ausbreitung der Stämme und Aeste rührt.

Doch wozu eine lange Beweisführung bei einer so leicht erklärbaren Sache! Man gehe an die erste beste ausgetrocknete Pfütze, um sich dort die Modelle zu K. M.'s *Sickleria* zu besehen. Denn dass diese vermeintliche Pflanze nichts Anderes ist, als die Ausfüllungsmasse von Rissen, die sich beim urweltlichen Sonnenschein, wie heute, im Thonschlamme gebildet, wird jeder, mit nicht krankhafter botanischer Phantasie Begabte, von vorn herein leicht einsehen. Auch in den Steinbrüchen kann man sich noch leicht von dem Ursprunge dieser Steinnetze überzeugen. Diese letztern finden sich nämlich immer im Hangenden der Thonschichten, durchsetzen diese ganz und hängen mit dem Liegenden mehr oder weniger fest zusammen. Die Maschenfelder sind nicht selten convex, was darauf hindeutet, dass die einzelnen Thonstücke sich durch das Austrocknen an den Rändern schon aufwärts gebogen hatten. Wurden die Thonstücke von dem strömenden, sandführenden Wasser von ihrer Unterlage getrennt, so entstanden Thongeschiebe, welche in die Sandlager eingeschlossen wurden und jetzt unter dem Namen der Thongallen in allen Sandsteinen bekannt sind. In diesem Falle gab's dann keine *Sickleria*!

Strassburg, d. 14. März 1846.

W. P. Schimper.

Floratio, Florescentia et Inflorescentia.

Hr. K. M. wirft der Bryologia europaea vor, dass sie den Ausdruck *Florescentia* schwankend gemacht! Wann und für was stand dieser Ausdruck je fest? Wie kann ein aus willkührlichem Gebrauche geschöpftes terminologisches Buch ein Gesetz bilden? — Das Blühen der Pflanzen ist wie das Vegetiren derselben ein Actus, kein Sein, muss also im Gegensatze zu vegetatio, floratio heissen, wie ganz richtig im französischen *floraison*. Der Blüthenstand ist entweder die relative Stellung der Geschlechtsorgane, diese heisst *Florescentia*, oder die gesetzliche Anordnung der Blüthen an einer gemeinschaftlichen Axe, Inflorescenz, Inflorescentia!

W. P. Schimper.

Literatur.

The London Journal of Botany etc. by Sir W. J. Hooker. No. I—XII. 1845. 8.

(*Fortsetzung.*)

Beobachtungen über die Vegetation von „Great Arran Island, Galway Bay", angestellt während einer Excursion im August und September 1845, von Wm. Andrews, Esq., Secret. d. naturf. Ges. v. Dublin etc. S. 569 u. 70. Der Verf. giebt keine

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vollständige Flor, sondern nur ein Paar Notizen über dieselbe und fügt am Schluss hinzu, dass John Wynne Esq., welcher die irische Flor schon durch die Entdeckung von *Saxifraga nivalis* bereichert habe, nun *Arabis petraea* und die wahre *Saxifraga pedatifida* Ehrh. gefunden habe. Der Vf. selbst habe in diesem Jahre *Arabis stricta* und *Draba rupestris* hinzugefügt.

Verkauf europäischer und anderer Moose, b. W. P. Schimper in Strasburg. S. 571. Sammlungen, welche meistens europäische Arten enthalten, und wie Drummond's amerikan. Moose eingerichtet sind, sollen 8 L. Sterl. kosten, zwei viel reichere, mit allen europäischen Formen und 200 exotischen Arten, von denen 100 neu oder unbeschrieben sind, jede zu 15 L. Sterl.

Nachricht von Mr. Bridges *in Bolivia, datirt von Cochabamba d. 3. April* 1845. S. 571—577. Er beschreibt in diesem Briefe seine Reise vom Hafen Cobija über Potosi und Chuquisaca nach Cochabamba, überall Pflanzen, Vögel und Insecten sammelnd. Von dem letzten Ort aus wollte er nun die Provinzen Moxos und Santa Cruz de la Sierra besuchen.

Bemerkungen über die Mimoseae mit einer Synopsis der Arten, von Georg Bentham, Esq. (Fortsetz.) S. 577—622. Es folgt nun die Gattung *Inga* Mart., d. h. die Inga-Arten von Willdenow und Decandolle mit einfach paarig-gefiederten Blättern, sie zerfällt in 5 Sectionen: 1. *Leptinga*, racemi umbellaeformes, receptaculo subgloboso, pedicellis elongatis. Flores parvi glabri v. tenuiter puberuli; 14 Arten, welche wir hier nicht anführen wollen, da das Walpers'sche Repertorium sie doch alle in dem nächsten Hefte des 5ten Bandes aufnehmen muss. 2. *Diadema*, flores in capitulo globoso longe pedunculato sessiles v. rarius breviter pedicellati parvi tenues glabri. Petioli nudi v. rarius angustissime marginati. Glandulae parvae v. obsoletae; 8 Arten. 3. *Burgonia*: Spicae cylindricae. Fl. parvi numerosi glabri v. pilis brevissimis leviter puberuli. Calyx campanulatus, corolla pluries brevior. Petioli nudi v. saepius anguste alati. Glandulae sessiles scutellatae v. pezizaeformes. Spicae vulgo axillares solitariae v. fasciculatae, breviter pedunculatae 1—3 poll. Fl. sessiles vix unquam 3 lin. superant. Bracteae minutae; 14 Arten. 4. *Pseudinga*: Spicae ovatae densae v. longiores basi laxae v. interruptae. Fl. sessiles v. rar. brevissime pedicellati. Cal. tubulosus v. anguste tubuloso-campanulatus. Cor. speciebus paucis exceptis villosa. Legum. planum marginibus elevatis latitudine leguminis multo angustioribus; 51 Arten werden hier unter 6 verschiedene Abtheilungen untergebracht. 5. *Euinga*: Spicae ovatae

densae v. saepius longiores basi laxae v. interruptae interdum pauciflorae. Cal. tubulosus v. tubuloso-campanulatus quam in Pseudingis fere semper latior. Cor. villosa. Leguminis margines valde dilatati, sulcato-incrassati, latitudine (transversali) leguminis facies aequantes v. superantes. Pet. alatus v. rarissime apterus. Gland. scutellaeformes v. rarius turbinatae. Fl. majusculi nunc maximi absque staminibus $^1/_2$—2 poll. longi. Cal. striatus glaber v. pilosulus v. tomentosus. Leg. tetragonum v. subteres plurisulcum marginibus demum facies fere omnino obtegentibus; 42 Arten. Dann folgen noch zweifelhafte oder zu andern Gattungen gehörende Arten.

Beiträge zu einer Flora von Süd-Amerika. Aufzählung der von Sir R. Schomburgk *im Brit. Guiana gesammelten Pflanzen.* Von G. Bentham. (Forts.) S. 622—637. Es gehen diese Pflanzen von No. 847—880. und umfassen die Familien der Polygoneen, der Thymelaeen und der von Nees bearbeiteten Acanthaceen. Zu den Polygoneen gehören als neue Arten: *Coccoloba grandis, excelsa, perimensis, marginata, striata, ovata, lucidula, Triplaris Schomburgkiana, Ruprechtia tenuiflora, brachystachya* u. *Symmeria paniculata*, eine neue Gattung, ein Baum mit dioecischen Blumen, 6theiligem Perigon, zahlreichen Staubgefässen und dreieckigen Fruchtknoten mit 3 sitzenden Narben, welcher von den innern stark blattartig-häutig auswachsenden Perigonialtheilen bei der Frucht bedeckt wird. Unter den Thymelaeen sind zwei neue Gattungen *Lariadenia* und *Goodallia*, die erstere mit röhrigem, oben 5theiligen, schuppenlosen Perigon, 10 Staubgefässen, 5 kleinen hypogynen Schüppchen, dünnem Griffel, der eine dicke kopfförmige, mit 10 papillosen senkrechten Rippen versehene Narbe trägt. Frucht unbekannt. *L. rupestris*, ein Strauch. *Goodallia* hat dioecische Blumen, ein röhriges 5spaltiges, innen zottiges und nahe am Grunde 10 linealische kahle perigyne Schuppen tragendes Perigon, 10 Staubgefässe; in der weiblichen Blume sehr kleine lang steifhaarige hypogyne Schüppchen. Griffel kurz, oben mit dicker kopfiger, überall papillöser Narbe. Frucht kaum fleischig, vom wenig auswachsenden Perigon umschlossen, steifhaarig mit hängenden Samen ohne Eyweiss. Ein Strauch: *G. guianensis.* Unter den Acanthaceen sind: *Hygrophila guianensis, Stemonacanthus Humboldtianus, Dipteracanthus canescens, Thyrsacanthus Schomburgkianus, Beloperone Schomburgkiana* und *B.? calycina* neue Arten.

Beschreibung dreier neuen Pflanzen aus Oberindien, gesammelt von Dr. Thos. Thomson und Dr. Bacon. S. 637—639. T. 20. 21. 22. Diese drei Pflanzen sind: *Gentiana (Chondrophyllum) cepha-*

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lodes Edgew. (in Linn. Soc. Trans. ined.) auf T. 20. unter dem Namen *G. Baconi* abgebildet, aus Nepal und vom Himalaya in einer Höhe von 5000′. *Saxifraga diversifolia* Wall. Taf. 21. aus Kamaon von Bacon gesammelt. *Cicendia Roxburghii* Gris., von Mooredabad in Oberindien von Thomson gesammelt, aus dessen Herbar alle 3 entnommen sind.

(*Schluss folgt.*)

Sammlungen.

Flora Galliae et Germ. exsicc. Cent. V. et VI. (Auszug aus d. Archives d. Bot.) Fortsetzung s. bot. Zeit. 1845. Sp. 665 ff.

Die in der Flora Jan. 1841 vom Verf. publicirten Bemerkungen über *Carex fulva* et *Hornschuchiana* sind von Billot übersetzt und folgen nun. Er nennt darin die Art *C. biformis* und hat 2 Var. *α. fertilis* (Hornsch. Hoppe u. *C. fulva* Schk. tab. T. f. 67. planta sinistra) — *β. sterilis* (*fulva* Good. et Schk. l. c. pl. dextra). Er bemerkt dabei, dass es bemerkenswerth sei, dass bei den Diagnosen der *Carex* auf den Samen keine Rücksicht genommen werde, während man ihn bei *Scirpus* so sehr beachte, wahrscheinlich werde man später noch mehr Arten bei genauerer Untersuchung der Samen vereinen.

Ranunculus paucistamineus Tausch wird von J.B. Drouet im Wasser und am Ufer beschrieben.

Ueber eine Aeusserung von Reichenbach wegen seiner Ansicht über *Rh. major* Ehrh. und dessen Varr. lässt sich der Verf. sehr bitter aus, indem er Versuche anführt, wo durch Aussaat des *Rh. glaber* mit breitgerandeten Samen von feuchten Wiesen auf sandigen trocknen Roggenäckern *Rh. hirsutus* mit fast ungeflügeltem Samen entstanden sei und giebt folgende Diagnosen:

Rhinanthus major Ehrh. Beitr. 6. 144. bracteis decoloribus pallidis, superior. inciso-serratis, dentibus subulatis cuspidatis, labiis cor. porrectis, tubo subcurvato, dente in utroque latere labii sup. ovato, fol. oblongo-lanceolatis.

α. glaber, cal. glabro, seminum alis dimidio semine latioribus (*R. glaber* Lam.). In pratis humidis et paludosis praecipue solo arenoso-turfoso.

β. hirsutus, cal. villoso, seminum alis dimidio semine latioribus (*Rh. hirsutus* Lam.). In pratis et agris solo argilloso et calcareo.

γ. subexalatus, cal. villoso, seminum alis semine ipso triplo angustioribus (*R. Alectorolophus* Poll.). Inter segetes Secalis praecipue solo arenoso.

Der dritte Bogen der Archives beginnt mit der Skizze einer Arbeit über die Gattung *Astrocarpus*, Fragment einer Monographie der Resedaceen von

J. Gay. Es sind 2 Arten: *A. sesamoides* Gay (*Reseda ses.* L., Gouan, W. nebst *Astr. ses. α. stellata* Duby) und *A. Clusii* Gay (*Sesamoides* etc. Clus. Hist. p. 296. ic., Tourn. Inst. p. 124., *Reseda canescens* L. et Asso non Vahl nec aliorum, *R. purpurascens* L., W., Poir., Brot.; *R. sesamoides* All., Poir., DC. non L.; *R. Clusii* Spr., *Astroc. ses. β. purpurascens* Duby) mit einer Var. *β. spathulaefolius* (*Astr. sesamoides* Salis, *R. sesam. β. spathulata* Moris).

Dann folgen neue Pflanzen in Frankreich und Deutschland von F.G. Schultz gefunden und zum Artenrang erhoben. *Cirsium bipontinum*, früher vom Verf. *C. oleraceo-lanceolatum* genannt, sehr schwer von *C. Lachenalii* Koch zu unterscheiden durch breitere weniger eingeschnittene Blätter, grüne, viel breitere und mit stärkeren Stacheln bewehrte Involucralblätter; ist von demselben vielleicht nur Var., doch kommt es nur auf einer Wiese bei Zweibrücken mit *C. oleraceum* und *lanceolatum* vor, und würde, wenn es zu *C. Lachenalii* gehört, beweisen, dass dies kein Bastard sei. — *Hieracium Schultesii* kommt mit *H. Pilosella* und *Auricula* bei Bitsch vor und war früher für einen Bastard dieser beiden vom Verf. erklärt. Unterscheidet sich von *H. stoloniflorum* und *bifurcum* durch stumpfe Blätter, durch sterile wurzelnde, niemals aufrechte blühende Stolonen und von *bifurcum* noch durch zweifarbige Randblumen.

Zu der ersten Centurie seiner Flora Galliae et Germ. exsicc. giebt der Verf. ein neues Inhaltsverzeichniss mit Verbesserungen, gleichsam eine 2te Auflage, und spricht dann über das Vorkommen der *Anemone vernalis*; diese nordische Pflanze findet sich im Centrum Europa's ausser auf den Alpen am Rande der Gletscher nur an wenigen Orten, nämlich an einigen Flüssen, welche von den Tyroler Alpen kommen, wie an der Isar, dann im Jurakalk und Grünsandstein bei Regensburg, ferner an zwei sehr beschränkten Localitäten bei Hochspeier und Kaiserslautern, wo Pollich und Koch sie fanden, und andern, wo der Verf. sie fand, so wie in Lothringen und dem Elsass. Alle diese Localitäten befinden sich auf der Formation des Vogesen-Sandsteins auf dem Kamme, welcher die Wasserscheide der nach Osten in die Sarre und nach Westen in den Rhein fliessenden Gewässer bildet, in Haiden und Wäldern von Birken und Kiefern zwischen *Hypnum*, *Dicranum spurium* etc., an einigen Orten mit *Daphne Cneorum*.

Die Veilchen der Abtheilung *Canina* theilt der Verf. nach Anleitung eines ihm von C. Schimper mitgetheilten Factums folgendermassen ein: A. Haupt-

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achse setzt sich in eine sterile Blattrosette fort und von dieser ausdauernden Hauptachse kommen als Secundärachsen die Seitenstengel, welche in den Blattachseln die blühenden Blumenstiele tragen. 1. *Viola arenaria* DC. (var. flor. lacteis). 2. *V. sylvestris* Lam. et v. β. *Riviniana*. B. Hauptachse verlängert sich in einen Stengel, welcher am Ende des Sommers fast bis zur Basis nebst den folgenden Stengeln abstirbt. a) Das Rhizom treibt keine Stolonen. 3. *V. canina* L. (*Ruppii* All.). 4. *V. lancifolia* Thore. b) Das Rhizom treibt unterirdische Stolonen, welche eine neue Pflanze geben. α. longicalcaratae, der Sporn doppelt so lang als die Anhängsel des Kelchs. 5. *Viola Schultzii* Billot (*Rnppii* Rchbach.). β. brevicalcaratae, der Sporn so lang oder kaum länger als die Kelchanhängsel. 6. *V. stricta* Horn. (*Ruppii* Koch syn.). 7. *V. elatior* Fries. 8. *V. stagnina* Kit. β. Billotii stipulis majoribus (*V. Billotii* Schultz), kleinere Individuen dieser Pflanze sind *V. pumila* Mut. fl. fr. tab. supp. 1. f. 1. (nicht v. Chaix u. Villars) und grössere sind *V. pratensis* Mut. l. c. f. 2. (nicht Mertens u. Koch). 9. *V. pumila* Chaix in Vill. Dauph. (*pratensis* Mert. u. Koch). Dass diese letztere Synonymie richtig sei, bewährt der Verf. noch durch die Ueberzeugung anderer, welche diese Pflanzen sammelten, sie ist in der Gegend um Gap (Hautes Alpes) eben so häufig als an den Ufern des Rheins.

Die neue, schon 1836 von Schultz *Soleirolii* genannte *Gagea* (in Mut. fl. fr. 3. p. 298. t. 73. f. 547. u. Fl. Gall. et Germ. exs.) ist von Tausch *G. corsica* in der Flora von 1841 genannt worden, der Verf. giebt wieder eine Diagnose.

Es folgen nun einige auf seine Sammlung bezüglichen Notizen und es schliesst der Bogen mit einer Uebersetzung einer Lebensbeschreibung von Jul. Herm. Schultes und ein Paar Anzeigen wegen der ferneren Herausgabe seiner botan. Unternehmungen, welche durch den Tod seines einzigen erwachsenen Sohnes eine Unterbrechung erlitten hatte. *S—l.*

Kurze Notizen.

In den bayer. gel. Anzeig. No. 239. wird eine vom Hrn. Dr. Guyon, Chirurg. en chef der afrikanischen Armee, eingesandte Notiz über die Ursache der Unfruchtbarkeit der Dattelpalme in Algier und andern Punkten der Küste von Algerien mitgetheilt, worin derselbe sagt, dass die bei Algier vorkommenden, aber wie in den dattelreichen innern

Gegenden (Biscara), zum grössten Theil weiblichen Dattelbäume zwar alle Jahr blühen und Früchte tragen, aber keine keimfähigen Kerne erzeugen und dass der Grund nach Angabe der Araber darin liege, dass eine künstliche Befruchtung nicht statt finde, wie dies überall da geschehe, wo die Einwohner diese Bäume allgemein benutzen. Auffallend sei es jedoch, dass im südlichen Spanien die Datteln Frucht bringen, wie z. B. der Werth der Dattelerndte in den Palmenwäldern von Elche, von Laborde durchschnittlich auf 100,000 Fr. angegeben werde. Der Hr. Classensecretair bemerkt dazu, dass vielleicht alle sogenannten wilden Dattelpalmen von Syrien und Nordafrika nur verwildert sein möchten und dass das Vaterland dieser Culturpflanze vielleicht eben so wenig gekannt sei, als das anderer Nutzpflanzen, doch seien in Beziehung auf die Dattel die Gegenden an dem persischen Meerbusen und in Babylonien noch nicht gehörig untersucht. Ref. scheint der Grund der Erscheinung einfach darin zu liegen, dass Pflanzen, welche auf andre Weise als durch Samen sich vermehren können, häufig gar keinen oder weniger reifen Samen erzeugen; dies mag um so mehr bei der Dattel der Fall sein, da die Befruchtung noch durch Trennung der Geschlechter erschwert wird. Bei der Cultur wird ja auch sorgfältig darauf geachtet, alle diese Stockausschläge und Wurzelausläufer hinwegzunehmen, wie der alte Kämpfer schon anführt.

Die Frauen der Ostiaken verfertigen aus der Brennnessel ein Gewebe, das an Stärke die russische Leinwand übertreffen soll. Sie färben das Garn mit rothen und grünen Farben, die sie aus den Wurzeln gedachter Brennnesseln bereiten. So erzählt Castren in seinen Reise-Skizzen aus Nordost-Sibirien, und wir fragen, was ist das für eine Brennnessel, welche die Gewebe und die Farben zu den Geweben liefert.

Pflanzenverkauf.

Es sind in Paris bei M. Hippolythe, Rue du Helden No. 17, folgende Sammlungen getrockneter Pflanzen zu verkaufen. Von Aucher-Eloy

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ART. VI.—*A Monography of the North American Cuscutineæ;* by GEORGE ENGELMANN, M. D., of St. Louis, Missouri.

IN directing my attention to the different forms of Cuscuta of this vicinity, I was surprised to find several distinct species, as well as a remarkable allied genus, while only a single species, the *Cuscuta Americana*, is noticed in botanical works. Having been induced to examine particularly as well the species of this neighborhood, as the specimens with which my correspondents in different parts of the country have favored me, I offer the result of my investigations to the public, with the view of directing the attention of botanists throughout our wide-spread country to the subject; trusting that this neglected tribe of plants may thereby be further elucidated. I therefore avail myself of this opportunity to request botanists in different parts of the country to communicate specimens of the Cuscutæ of their vicinity, accompanied by the plant on which they grow.

Order CONVOLVULACEÆ, *R. Br.*

Tribe. 2. CUSCUTINEÆ, *Link.*

Leaves reduced to scales. Embryo spirally rolled around a mucilaginous albumen, without cotyledons.

This remarkable tribe is appended to *Convolvulaceæ*, and bears to that family the same relation which *Monotropeæ* bear to *Pyrolaceæ*, and *Orobancheæ* to *Antirrhineæ:* these plants, which may be likened to Phanerogamous Fungi, being all destitute of verdure and of proper leaves, (bearing scales in place of the latter, but never leafless in the full meaning of the term;) while in the structure of their flowers they agree with plants of the highest organization. They are all parasitic on other vegetables; the *Cuscutineæ* on their stems; most *Orobancheæ* on their roots; and the *Monotropeæ* on their mouldering remains: hence they are obviously analogous to the class *Entozoa* of the animal kingdom; and may be termed *Epiphyta*, growing on plants.

The Cuscutineæ are distinguished from other Epiphyta by their growing on and twining around the stems (and occasionally the leaves) of other plants, as well as by their large seeds, resembling those of Convolvulus, but presenting a long and slender embryo, which is spirally coiled around a mass of mucilaginous

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albumen. *Monotropeæ* and *Orobancheæ* have extremely minute seeds, in some respects similar to the spores of Acotyledonous plants. The seeds of Cuscutineæ germinate in the ground; but soon finding the plants round which they twine, (turning constantly to the left, like all Convolvulaceæ,) they strike their papillose roots into the epidermis of the stem, from which they subsequently derive their nourishment; their own original stems soon withering away, so that the plant is no longer in direct communication with the earth.

As in the *Entozoa*, the same species inhabits only the same or some nearly related animal, so in the *Epiphyta*, each species is for the most part restricted to the same or similar plants. This is more constantly the case in *Orobancheæ*, where the germinating embryo fixes itself at once upon its favorite plant; but in Cuscuta, where the seed germinates in the ground, and the stem afterwards lays hold of the plant which affords its nourishment, it frequently twines around all the plants in the neighborhood, and is capable of extracting from them its food. Some species, however, are more constant in their predilections than others; as, for example, the European *Cuscuta Epilinum*, which never grows on any other plant than Flax; and our *Lepidanche Compositarum*, which is confined to *Solidago*, *Helianthus*, and some other *Compositæ*. Yet several, like the European *Cuscuta Epithymum* and the American *C. Polygonorum*, live promiscuously on most plants within their reach, evidently preferring, however, some particular species or genus, and seldom found except in its immediate vicinity. I have therefore ventured, as far as practicable, to name the species of Cuscuta after the plant upon which they grow; in accordance with the nomenclature frequently adopted of late in the case of parasites, especially in the genus *Orobanche*, (Examp. *Orobanche Galii*, *O. Eryngii*, *O. Scabiosæ*, *O. Salviæ*, etc.)—thereby designating an important circumstance in the history of the plant.

Before I proceed to describe the North American species known to me, it may be well to present a general

Conspectus of the species that have come under my observation.

I. Cuscuta, *Linn.* Sepals united into a 4–5-cleft calyx.

§ 1. *Styles united into one.*

1. C. monogyna, *Vahl.*—Eastern Europe.

§ 2. *Styles two.*

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* *Stigmas capitate.—European.*

† *Flowers generally pentamerous.*

2. C. Epithymum, *Linn.* Segments of the calyx and corolla acuminate.—Europe.

3. C. Epilinum, *Weihe.* Flower globose: segments of the calyx and corolla orbicular, abruptly acuminate.—Europe.

4. C. planiflora, *Tenore.* Flower campanulate, open.—Italy.

†† *Flowers generally tetramerous.*

5. C. Europæa, *Linn.* Lobes of the calyx and corolla obtuse.—Europe.

** *Stigmas capitate.—American.*

A. Corolla cylindric, its remains covering the ripening capsule.

† *Flowers generally pentamerous.*

6. C. Chilensis, *Ker.* Corolla much longer than the campanulate calyx: anthers sessile.—Chili.

7. C. Cephalanthi. Lobes of the calyx and corolla obtuse: anthers with filaments.—St. Louis.

†† *Flowers generally tetramerous.*

8. C. Coryli. Lobes of the calyx and corolla acute.—St. Louis.

B. Corolla campanulate, its remains persistent at the base of the ripening capsule.

† *Flowers generally pentamerous.*

9. C. vulgivaga. Carinate lobes of the calyx and the lobes of the corolla obtuse.—Vermont to Georgia and Missouri.

10. C. Saururi. Smooth, lobes of the calyx and corolla obtuse.—Western New York to Missouri.

11. C. pentagona. Lobes of the 5-angled calyx smooth, roundish; those of the corolla acuminate.—Virginia.

12. C. verrucosa. Lobes of the campanulate calyx verrucose, roundish; those of the corolla acuminate.—Texas.

†† *Flowers generally tetramerous.*

13. C. Polygonorum. Lobes of the calyx and corolla acute.—St. Louis.

II. Lepidanche. Calyx consisting of 10–15 imbricated sepals.

1. L. Compositarum. Western United States.

(1.) CUSCUTA, *Linn.* (Dodder.)

Calyx monosepalous, 4–5-cleft, persistent. Corolla campanulate or urceolate, 4–5-cleft. Styles one or two. Capsule 2-celled, 4-seeded.

Twining parasitic plants, bearing the general character of the family. The stem is filiform, simple or generally branched, of a whitish, yellowish, or orange color, with scaly leaves. The inflorescence is a cyme, (with a central flower opening first, and axillary or lateral flowers, which open afterwards,) with whitish sessile or pedunculate flowers, more or less clustered (conglomerate) in some, and rather loose (commonly called paniculate) in other species. Some bracts are observable on the peduncles and pedicels, but they are always easily distinguished from the calyx.

The first or central flowers of the inflorescence are mostly 5-parted, but the lateral or secondary ones are in some species

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regularly 4-parted, in others nearly always 5-parted. The calyx is constantly monosepalous, deeply and somewhat irregularly 4- to 5-parted, and persistent.

The corolla is cylindric, urceolate, or campanulate, with the limb erect, spreading or reflexed, and together with the stamina either persistent at the base of the capsule, or more frequently separated from its insertion and covering its summit. Its texture is in some species nearly membranaceous, in others thicker and more fleshy.

The stamina are united with the tube of the corolla up to the base of the segments. Near their base, within the tube of the corolla, they bear a scale, which is evidently not a distinct organ, but only an appendage of the stamina. They are present in all the species which I have examined; sometimes consisting only of one or few teeth on both sides of the filament, (as in C. Coryli,) but commonly forming a distinct lamina. In some they are bifid, in others undivided; but in all either crenulate or fimbriate, or laciniately or pinnatifidly divided. They are erect and appressed to the tube in several species; while in others they are convergent, closing the tube and including the ovary.

The ovary is always 2-celled, 4-ovulate; the styles two, (in a single species united into one,) frequently unequal in length; in a few cases supported by a stylopodium. The stigma is either filiform, as in the European, or capitate, as in the American species.

The capsule is globose or depressed, crowned by the persistent styles and stylopodium (when the latter is present); it is 2-celled, and sometimes 4-seeded; but more generally by abortion, 3-, 2-, and even 1-seeded. In the European species, it separates by circumscision from its base, leaving the dissepiment persistent on the calyx. In the American, the capsule does not appear to open regularly, but it separates easily from the calyx when ripe.

I have seen very few abnormal irregularities in the flowers of Cuscuta. Sometimes one or more segments of the corolla are partially or entirely changed into a stamen, and the capsule is occasionally 3–4-carpellary, instead of 2-carpellary.

1. Cuscuta Cephalanthi, *n. sp.*

Stem high, branching; flowers somewhat pedunculate, mostly 5-parted; tube of the corolla cylindric, (after flowering ventricose,) twice the length of the obtuse spreading segments, and of

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the ovate obtuse lobes of the calyx; stamens shorter than the limb; the scales ovate, laciniate, nearly appressed; styles equal to the depressed ovary; capsule depressed, covered by the remains of the corolla.

On Cephalanthus; also on Vernonia, Aster, Bœhmeria, and other plants, (especially Compositæ,) on the margin of ponds and swamps near St. Louis, where it is the most common species. I have observed it since 1833; but have only met with it in the immediate vicinity of Cephalanthus. July to September.

The whole plant is whitish or pale yellow; the stem high and much branched; the flowers sometimes clustered and nearly sessile, but generally more or less pedunculate, and disposed in compact or rather loose cymes. The divisions of the calyx are very unequal, ovate, or roundish, obtuse, rarely with a little point, covering only the lower half of the tube. The tube itself is perfectly cylindrical in the young flower; but afterwards swells by the enlargement of the ovary, and becomes somewhat urceolate. The lobes of the corolla are ovate, obtuse, somewhat auricled at the base, and campanulate or spreading, half as long as the tube, but longer than the stamina. The corolla is membranaceous, not fleshy. The flowers are mostly 5-parted; but the latest ones of the season are often 4-parted, or even 3-parted. The ripe capsule separates easily from the calyx, apparently without bursting.

2. Cuscuta Coryli, *n. sp.*

Stem branching; flowers peduncled, subumbellate, mostly 4-parted; tube of the corolla cylindric, equal in length to the ovate acutish crenulate inflexed lobes, and the acute carinate segments of the calyx; stamens a little shorter than the limb; the scales appressed, bifid, consisting of few teeth; styles as long as the ovary with the stylopodium; capsule depressed, covered with the remains of the corolla, crowned by the stylopodium and the reflexed styles.

Var. *β.* stylosa: styles much longer than the ovary, exserted.

On Corylus, in the barrens west of St. Louis, in August and September. *β.* On Solidago, in dry prairies near St. Louis.

This species is nearly related to the foregoing, but may be easily distinguished by the shape and proportions of the calyx and corolla, and by the stylopodium on the ovary. The corolla is

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fleshy, not membranaceous, and finely crenulate; the lobes always erect and somewhat incurved. The scales of the filaments are smaller than in any other of our Cuscutæ, and consist of one or two teeth on each side of the filament, (where it adheres to the tube,) thereby indicating the true nature of these singular "nectaria." It appears to be rarer than the other species, and grows more on dry ground.

3. Cuscuta vulgivaga, *n. sp.*

Stem branched; flowers pedunculate, somewhat glomerate or more lax, generally 5-parted; tube of the corolla deeply campanulate, longer than the pellucid-punctate open (finally reflexed) lobes, and the roundish, carinate, obtuse and slightly crenulate segments of the calyx; scales convergent, fimbriate, united at the base; styles about as long as the ovary (with the stylopodium); the remains of the corolla persistent at the base of the globose capsule.

Var. α. LAXIFLORA: flowers in loose cymes.

β. GLOMERATA: flowers conglomerate.

γ. TETRAMERA: flowers in umbelliform cymes, 3–4-parted.

This species has apparently not only the widest range of all the American Cuscutæ, but is less restricted to the same genus or family of plants. Indeed I have scarcely met with it twice upon the same species. Var. α. is the southern and western form: Western New York on Decodon, *Dr. A. Gray;* Missouri on Cephalanthus and Amphicarpæa, and Georgia, on ——? *J. Carey;* Alabama, on Salix and Aster, *S. B. Buckley.* Var. β. is the northern form: my specimens are from Vermont, on Leersia, and New Hampshire, on Solidago, both from *Mr. J. Carey.* Var. γ. Connecticut, on Urtica, *J. Carey.*

The *Cuscuta vulgivaga*, is perhaps in part the Cuscuta Americana of Linnæus, and of many later botanists. But their diagnoses are too incomplete to decide the point, and different species undoubtedly have been confounded under this name. Even Linnæus himself (Spec. Plant. ed. 1, p. 124) referring to Gronov. Virg. and to Sloane, Hist. I, p. 201, t. 128, f. 4, confounds two distinct species. Which of them is to be the *C. Americana?* Linnæus has only the following words: "Cuscuta floribus pedunculatis." Michaux, (I, 175): "Cuscuta, floribus pedicellatis, pentandris." Pursh, (I, 116): "C. fl. pedunculatis umbellatis

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5-fidis." Other botanists add, "stigmatibus capitatis." Nuttall, gen. (II, addit.) on the other hand has it: "flowers mostly pentandrous and sessile;" and Sprengel (Syst. Veg. I, 864) brings his C. Americana under the section with glomerate subsessile flowers. While these authors refer to one or more North American species, others apply the name with at least equal justice to a West Indian plant. Linnæus himself cites Sloane, Hist. I, t. 128, f. 4. After him Jaquin, (Stirp. Am. p. 24,) Swartz (Obs. p. 54) and others describe a West Indian species. The name may therefore properly be reserved for Sloane's plant, or may be discarded altogether. The only reason I have in supposing that most North American authors give it to *Cuscuta vulgivaga*, is that this is the most common and the widest spread species in the United States, and has generally the flowers longer peduncled than any other.

This Cuscuta is intermediate between C. Cephalanthi and C. Saururi. In all three the lobes of the calyx and corolla are obtuse, and the former shorter than the tube of the corolla. But our plant is distinguished from both by the carina of the lobes of the calyx, which is formed by larger uneven prominent cells, and by the large pellucid dots in the substance of the corolla, which may be mistaken for glands, but are nothing but cells larger than the rest of the tissue. The carinæ of the calyx are most prominent on the three outer lobes, and sometimes hardly perceptible on the two inner; but even then the large irregular cells are easily distinguished by the lens. The lobes of the corolla are shorter than the tube, as in C. Cephalanthi: the scales are large and incurved, and the corolla remains at the base of the capsule, as in C. Saururi. The tube is campanulate, but deeper cleft than in C. Saururi or C. Polygonorum. The flowers and fruit are larger than in C. Cephalanthi, and (especially in var. *α*.) nearly of the same size as in C. Saururi. The styles are in some specimens a little longer, in others a little shorter than the ovary, which appears to be crowned by a stylopodium: this however it is hardly possible to ascertain satisfactorily in the dried specimens.

4. Cuscuta Saururi, *n. sp.*

Stem low, branching; flowers 5-parted, somewhat peduncu-late, at length in spikes; tube of the corolla campanulate, equal to the obtusish campanulate or spreading lobes, and longer than

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the obtuse segments of the calyx; stamens as long as the limb; the scales pinnatifid-laciniate, convergent, covering the ovary; styles as long as the ovate-globose ovary with the stylopodium; remains of the corolla persistent at the base of the subglobose capsule.

Margin of lakes and swamps, in the "American Bottom" opposite St. Louis, on Saururus, where it was discovered in September, 1841, by my friend, Ch. Geyer, the indefatigable botanist who has signalized himself in the North Western Expedition of Mr. J. N. Nicollet in 1839. Alabama, *Dr. A. Prout.* Texas, on Bœhmeria, Polygonum, &c., *F. Lindheimer.* A variety with rather larger calyx-lobes, in other respects perfectly agreeing with the above description, was obtained by Dr. A. Gray, in Western New York, (also on Saururus?)

This species bears a great resemblance to C. Polygonorum; but differs from it in the much stouter stems, the greater size of the flowers, the larger convergent scales, and the stylopodium on the ovary. The stems are one third of a line or more in diameter, and are stouter than in any other of our species. It is the latest species in blossom, the flowers not appearing before the beginning or middle of September; while C. Polygonorum commences in August, and C. Cephalanthi and C. Coryli, which are the earliest flowering species of our neighborhood, are in bloom by the end of July.

5. Cuscuta pentagona, *n. sp.*

Stem branched; flowers pedunculate, subumbellate, small, 5-parted; tube of the corolla open campanulate, shorter than the long acuminate lobes, and the smooth, roundish, obtuse lobes of the 5-angled calyx; stamens shorter than the limb; the scales ovate, fimbriate, convergent; styles filiform, about equal to the globose ovary; capsule ——.

On Euphorbia or Tragia, Norfolk, Virginia, *Mr. Rugel;* communicated by Dr. Gray. Also near Houston, Texas, on different low herbs in a wet prairie; flowering in April, *F. Lindheimer.* Beardstown, Illinois, in sandy soil, *Ch. Geyer.*

This species bears some resemblance to the C. Polygonorum, to which it is related by the campanulate flower and the acute lobes of the corolla; but is easily distinguished by the small size of the flowers, the 5-angled calyx, whose lobes are not triangular,

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but roundish and obtuse. The angles are formed by the margins of the lobes of the calyx and correspond with the petals, while in C. Coryli the five angles, formed by the five prominent mid-ribs, alternate with the lobes of the corolla.

6. Cuscuta verrucosa, *n. sp.*

Stem low, branching; cymes loose, few-flowered; flowers (small), long-peduncled, 5-parted; tube of the corolla campanulate, shorter than the lanceolate acuminate lobes, and nearly equal to the ovate subacute segments of the verrucose or somewhat hispid calyx; scales ovate, fimbriate, equalling the tube; styles as long as the ovary; capsule globose, surrounded at the base by the persistent corolla.

Var. α. hispidula: inflorescence, and frequently also the branches, hispid or glandular-pilose; lobes of the calyx acute, shorter than the tube of the corolla.

β. glabrior: cymes more or less glabrous, lobes of the calyx broader, somewhat obtuse, nearly as long as the tube of the corolla.

Texas: var. α. in dry sterile prairies, west of Houston, on Euthamia, Schrankia, Aster, Ambrosia, Evolvulus, and other low herbs; flowering in April and May, *F. Lindheimer.* β. with the preceding variety, *F. Lindheimer:* on Petalostemon, *Drummond*, (3d collection, No. 247.)

This species is the lowest of all the American Cuscutæ, and has, together with the foregoing, the smallest flowers; it grows on open prairies, in dry soil: in all these respects therefore it takes in Texas the place of *Cuscuta Epithymum* in Europe. Like that species it is not restricted to a few plants, but appears to creep over every thing in its way. It is the only Cuscuta known to me with any appearance of pubescence.

Stem from four to six inches high, smooth (β.) or more or less hispidly pubescent with pellucid vesicular hairs, (α.) especially in the inflorescence. Peduncles filiform, many times longer than the flowers. Calyx always rough, but the vesicles less hair-like, more glandular, or when dry like warts. In flowering, the calyx is campanulate, or even somewhat turbinate, but soon after assumes a hemispherical shape, which is the one figured in the plate. Lobes of the corolla very acute, spreading, white; after flowering the tips incurved, turning brown. Stigmas globose, purplish-brown.

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This Texian species is nearly related to C. pentagona: the size of the flowers, shape of corolla and the scales, are the same; but it is easily distinguished by the loose and few-flowered cyme, and by the tuberculate or hispid-campanulate (not pentagonous, smooth, and membranaceous) calyx.

7. Cuscuta Polygonorum, *n. sp.*

Stem low, branching; flowers subsessile, glomerate, mostly 4-parted; tube of the corolla campanulate, nearly equal to the acute campanulate or spreading lobes, and the acute segments of the calyx; stamens as long as the limb; the scales mostly bifid, laciniate, appressed; styles as long as the depressed ovary; remains of the corolla persistent at the base of the depressed capsule.

On different species of Polygonum, also on Lycopus, Penthorum, and other plants in the neighborhood. August and September.

This is a much lower plant than C. Saururi, etc., with orange-colored stems, twining round the Polygona in overflowed places, the bottoms of sink-holes, or margins of ponds, west of St. Louis, where in the year 1839 my friend *F. Lindheimer*, now in Texas, to whose zeal and kindness I owe many specimens from that interesting country, first discovered it. In the following year, I found it on the banks of Illinois river, near Peru, in thickets formed by immense Ambrosiæ, with Bidens, Spartina, etc. Whether any Polygonum was there I cannot recollect, having at the time paid no particular attention to this point. The flowers of the specimens from Peru are a little more peduncled, and the very acute segments of the calyx rather longer than the tube of the corolla; but I observe no other difference.

This and C. Saururi, are easily distinguished from the others by their orange-colored stems, their larger open campanulate flowers, with the remains of the corolla always at the base of the capsule. The scales of the filaments in C. Polygonorum are intermediate between C. Coryli and C. Cephalanthi in shape; but are more laciniate than in the former. They are appressed to the corolla; so that the large depressed ovary appears naked in the open tube; while in C. Saururi it is covered by the convergent or inflexed multifid scales.

Note.—Since the manuscript of this article has been communicated to the American Journal, my attention has been directed to one or two species of Cus-

cuta indicated by the late Mr. Beyrich, and mentioned by Sir Wm. Hooker in his excellent *Flora Boreali-Americana*, (Vol. 2, p. 77,) and in the first volume of the *Companion to the Botanical Magazine*.

C. umbrosa of Beyrich, in herb. Hook. (*Fl. Bor.-Am. l. c.*) from Canada, the North West Coast, as well as the United States, I am unable to determine from the characters given. It may be either my C. Saururi, or C. vulgivaga, β. glomerata: the length of the styles does not appear to afford constant characters in this genus.

C. arvensis of Beyrich, in herb. Hook. (C. Americana? *Hook. fl. Bor.-Am. l. c.*) is perhaps my C. vulgivaga, α. laxiflora. According to Hooker, Douglas collected it in Oregon.

C. coronata, of Beyrich, in herb. Hook. is enumerated but not characterized in *Hook. Compan. to Bot. Mag. I, p.* 173. New Orleans, Drummond, 1833, on the stems of Laurus Carolinensis.

C. Epilinum, Weihe, has been introduced, with flax, into some parts of this country, especially Chester County, Pennsylvania, *fide*, *Darlington*, *Flora Cestrica*, *Ed.* 2.

(2.) LEPIDANCHE,* *n. gen.*

Calyx consisting of many imbricated scales, persistent. Corolla tubular, 5-cleft. Styles two. Capsule 2-celled, 2-seeded.

Very similar to Cuscuta when young; but different in appearance when in flower or fruit. The stem which connects the different clusters of flowers having then disappeared, the latter only remain, consisting of innumerable crowded sessile flowers, and scarious scales, spirally and most tightly coiled (with one or several turns) around the stems of the supporting plant, which at a distance appears as if a rope were twisted round it. The flowers are so crowded that many are abortive, and as it were strangled, presenting nothing but a bunch of scales; and others, which are apparently perfect, do not mature seed.

The principal difference between this genus and Cuscuta consists in the calyx, which is not monosepalous, but is composed of numerous imbricated scales; of which the two or five exterior, being much smaller, may be considered as bracts; while the ten inner, which are nearly equal in size and shape, crenulate, and with reflexed or squarrose summits, appear to constitute the proper calyx. The corolla and stamens, with their scales, are entirely similar to the corresponding organs in Cuscuta: so is the ovary; but the unequal styles are generally longer in proportion, and the stylopodium is as large as the ovary proper, or even lar-

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* From λεπις *a scale*, and αγχειν *to strangle*: a scaly plant, strangling those on which it grows.

ger. The ovary is 2-celled and 4-ovulate: but I have never seen more than two seeds, separated by the incomplete dissepiment; and frequently only a single seed ripens.

Lepidanche Compositarum.

Stem low, branching; flowers closely sessile, conglomerate, 5-parted; tube of the corolla nearly cylindrical, longer than the imbricated calyx, which consists of ten to fifteen scales, twice as long as the oblong obtuse spreading or reflexed lobes of the corolla; stamens equal to the limb, exserted; scales pinnatifidly laciniate, convergent, covering the ovary; styles twice as long as the ovary with the stylopodium; capsule globose, enveloped by the scales of the calyx, crowned by the stylopodium and styles, and covered by the remains of the corolla.

Var. *α.* Solidaginis: flowers smaller; lobes of the limb reflexed; stylopodium half as large as the ovary.

β. Helianthi: flowers larger, lobes of the limb spreading; scales of the filaments united with one another forming a 5-lobed crown in the tube; stylopodium larger than the ovary.

This singular plant appears to be peculiar to the western prairies. I have observed it since 1833 in wet prairies around St. Louis,* on Solidago, (also on Vernonia, *Ch. Geyer*,) and *Dr. Clapp* has found it on Silphium at New Albany, Indiana; the second variety I have gathered on Helianthus since 1838 in similar localities; flowering in August and September. These varieties may prove distinct species; but for the present I am unable to distinguish them by more important characters than those given above.

The flowers are always 5-parted; the tube is not exactly cylindrical, but a little wider at the mouth than at the base, rather obconic. The styles are longer than in any of our Cuscutæ, and almost always unequal; they are inserted on a distinct stylopodium, which is larger than in any Cuscuta. The stigma is capitate, as in all American Cuscutæ.

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* This is manifestly the *Cuscuta Americana* (from St. Louis) of Hooker's account of Drummond's collections, in the *Companion to the Botanical Magazine*, *I*, *p.* 173; of which it is remarked, that "Some of the specimens seem to have all the flowers abortive, and turned into scales, which are excessively crowded, and form a dense wreath of a pale straw-color, around the branch of some shrub."

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EXPLANATION OF PLATE VI.

Fig. 1–6. *Cuscuta Cephalanthi.*—1. A tetramerous; 2, a pentamerous flower. 3. Corolla laid open. 4. The ovary. 5. Vertical section of a half-grown capsule. 6. Capsule invested by the remains of the corolla.

Fig. 7–11. *C. Coryli.*—7. A flower. 8. Corolla laid open. 9. Ovary and styles. 10. Same of var. β. 11. Capsule invested by the remains of the corolla.

Fig. 12–16. *C. vulgivaga.*—12–14. Flowers. 15. Corolla laid open. 16. Ovary.

Fig. 17–21. *C. Saururi.*—17. The flower. 18. Corolla laid open, with the inflexed scales. 19. Ovary. 20. Vertical section of the half-grown capsule. 21. Mature capsule.

Fig. 22–24. *C. pentagona.*—22. Flower. 23. Corolla laid open. 24. Ovary.

Fig. 25. *C. verrucosa.*—Flower.

Fig. 26–29. *C. Polygonorum.*—26. Flower. 27. Corolla laid open. 28. Ovary. 29. Capsule.

Fig. 30–35. *Lepidanche Compositarum.*—30. Flower of var. α. 31. Flower of var. β. 32. Corolla of β. laid open. 33. Ovary and styles of var. α. 34. Same of β. 35. Capsule.

N. B. The flower represented in fig. 1, is a line in length; all the others are enlarged in the same proportion.

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ART. VIII.—*Corrections and Additions to the Monography of Cuscutineæ, in Vol. XLIII. of this Journal*; by GEORGE ENGELMANN, M. D.*

A CAREFUL re-examination of this tribe during the past season, as well as the increased opportunity of examining specimens from different parts of North America, have discovered some errors, and made some corrections and additions necessary, which I should, indeed, prefer to withhold for the present, and subject to the test of another season's study, if it were not important to correct such errors as soon as possible. A fuller description of the new species, with figures, I defer to another time.

I am now convinced, that, although many Cuscutæ prefer some plants to others, yet there is no constancy in this respect, but the same species often grows upon a great variety of widely different plants. I did wrong, therefore, to name them from the genera upon which they grew; and I should much prefer to see the names of *C. Cephalanthi* changed into *C. tenuiflora*, *C. Coryli* into *C. incurva*, *C. Saururi* into *C. umbrosa*, Beyr.? *C. Polygonorum* into *C. chlorocarpa*, and *Lepidanche Compositarum* into *L. squarrosa*, if they had not yet been published.

I. CUSCUTA, *Linn.*

1. CUSCUTA CEPHALANTHI.—Mostly 4-parted; frequently only 3-parted.

2. CUSCUTA CORYLI.—Found in many places near St. Louis, on Hazel, Willow, Desmodium, Teucrium, Solidago, etc. The *long* styles observed in some *dried* specimens of this as well as other species, are the consequence of a continued vegetation in the plant-press! The variety β. must therefore be stricken out. Flowers frequently 5-parted.

3. CUSCUTA VULGIVAGA.—Certainly the most common species. The stylopodium is very remarkable in the living specimens which I have examined; and the capsule is oval, even a little pointed, less globose than any other of our Cuscutæ; but I am not prepared to say that this is the case with all varieties of this

* The characters of the new species, &c. here described, have been published in the *London Journal of Botany* for April, 1843, as an appendix to the original monograph, there reproduced.—EDS.

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very variable species. The stamens and pistils are as long, or rather a little shorter than the corolla, but the latter are elongated after flowering. (*Cuscuta Americana*, Hooker?)

4. Cuscuta Saururi.—It is very probable that *Cuscuta umbrosa*, Beyrich, ex Hooker, is the same; which name must therefore be substituted for mine, though not quite appropriate. This plant is very nearly related to the former species, but can always be distinguished by the more open, campanulate corolla, which in *C. vulgivaga* is globose-campanulate, the thinner texture of calyx and corolla, which is destitute of the pellucid dots, and the oblong lobes of calyx and corolla, which are always more or less orbicular in *C. vulgivaga*. Large, overgrown specimens of *C. vulgivaga* have sometimes the lobes of calyx and corolla as long as the tube, but can always be recognized by the above characteristics. Such specimens are those from Alabama and Texas, mentioned in this Journal, Vol. xliii, p. 340. The true *C. Saururi* I have only received from western New York, and from this neighborhood; where it grows in abundance on Polygonum, Saururus, etc. in a few localities.

I must mention here two specimens of a Cuscuta received from Mr. M. A. Curtis, collected, one in Massachusetts, the other in North Carolina. In their principal characters they agree with *C. Saururi*, but the flowers are much smaller and frequently 4-parted; the linear oblong, obtuse lobes of calyx and corolla are rather longer than the tube; the filaments subulate, shorter than the limb; ovary with a stylopodium; styles short and thick; capsule ?

An examination of more complete specimens and the living plants must show whether there is a constant difference between this eastern plant and the western *C. Saururi*. But I may here remark, that the eastern form of *C. vulgivaga* is also mnch smaller than our western form, and from Connecticut I have also received a tetramerous *C. vulgivaga!*

5. Cuscuta verrucosa.—Under this name I have confounded two Texan species: the description is chiefly taken from the following species, but the figure refers to this one, which was first collected by Drummond and afterwards by Mr. Lindheimer, both times on *Petalostemon multifiorum*. The description must be altered:—C. verrucosa, cymes umbelliform, compound; flowers peduncled (small), 5-parted; calyx campanulate, verrucose; segments ovate, somewhat obtuse, shorter than the globose-campa-

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nulate tube of the corolla; lobes of the corolla long acuminate, somewhat longer than the tube; stamens half as long as the limb; scales ovate fimbriate, rather larger than the tube; ovary globose, depressed, without stylopodium; capsule depressed.—The tissue of the corolla is composed of large irregular cells.

6. Cuscuta hispidula, *n. sp.*—Stem low; cymes loose, few flowered, hairy or nearly smooth; flowers very long peduncled (small), 5-parted; tube of the corolla turbinate-campanulate, twice the length of the ovate subacute segments of the calyx, shorter than the long acuminate somewhat crenulate spreading lobes; stamens half as long as the limb; scales ovate, fimbriate, nearly equaling the tube; ovary with a stylopodium and short styles.

Texas, in dry and sterile prairies west of Houston. Flowering in April and May. Compare the remarks made in Vol. xliii, p. 341, under *C. verrucosa.*

7. Cuscuta neuropetala, *n. sp.*—Cymes umbelliform, smooth, flowers pedunculate (large), 5-parted; tube of the corolla campanulate, nearly equal in length to the ovate-lanceolate acute carinate segments of the calyx, and the ovate short-acuminate one-nerved crenulate spreading lobes; stamens rather shorter than the limb; scales ovate, fimbriate, incurved, as long as the tube; styles rather longer than the ovary with the stylopodium.

Texas, in wet prairies near Houston; on different Compositæ, such as Liatris, Solidago, Helianthus, Rudbeckia, and on Myrica cerifera; flowering in August; *F. Lindheimer.*

Flowers rather large, but variable in size; segments of calyx always very acute, ovate or ovate-lanceolate, somewhat shorter or a little longer than the tube of the corolla. Anthers yellow or purple; stigmas purple.

This and the last species resemble in the structure of the corolla the more northern *C. Coryli;* they have the same crenulated margin, the same fleshy cellular texture, similar incurved tips of the acute lobes, and the same white color, which is not altered in well-dried specimens.

C. neuropetala is distinguished from *C. hispidula* by its perfect smoothness, its flowers being twice or three times as large, its more compact, umbelliform cymes; the whole plant is taller, (in my specimens twelve to eighteen inches high.) The calyx segments, at least the three outer ones, are carinate; the lobes of

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the corolla are broader, shorter, composed of small linear cells, which are contracted in the middle into a distinct nerve. Stylopodium large in proportion to the ovary. Capsule not seen. The purple anthers and stigmas in the white flowers, give this species a very pretty appearance.

8. CUSCUTA PENTAGONA.—Capsule globose, somewhat depressed, without a stylopodium.

The description is taken from the Virginia plant; the forms from Illinois and Texas constitute two distinct varieties.

β. MICROCALYX: flowers shorter peduncled; calyx not remarkably 5-angled, much shorter than the tube of the corolla.—Illinois.

γ. CALYCINA: flowers shorter peduncled; calyx not remarkably 5-angled, longer than the tube of the corolla, which is equal to the acute lobes.—Texas.

This species bears some resemblance to *C. Polygonorum* on one side, and to the three foregoing species on the other; to these by the acuminate lobes of the corolla, to the first by the depressed ovary and pale greenish-yellow capsule;* but it is distinguished from both by the orbicular lobes of the generally large and more or less pentagonal calyx. The inflorescence represents little umbels in α, or approaches the glomerules of *C. Polygonorum* in β. and γ. The lobes of the corolla are acute, resembling in shape those of the following species, in the Texan variety; or longer and finely acuminate, (similar to *C. verrucosa* and *C. hispidula*,) in the more northern forms. Stamens short, only half the length of the limb; anthers nearly globose. Scales large, ovate, fimbriate, sometimes exceeding the tube. Ovary and capsule depressed.

This is probably the earliest species in North America; in Texas it has been found in bloom in April and May, and near Bardstown early in July; while here, one hundred miles further south, hardly any other species begins to open its flowers before the last days of that month.

9. CUSCUTA POLYGONORUM.—Segments of calyx generally as long as the tube of the corolla, mostly subacute, but occasionally also somewhat obtuse; the corolla is thin, membranaceous, composed of a very fine cellular tissue; stamens broad at base, subulate; scales smaller than in any other species, except *C. Coryli.*

* In all other species which are here mentioned, it is of a brown color, except perhaps in *C. Cephalanthi*, where it is also light-colored.

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II. Lepidanche.

Last autumn I discovered a second species of this genus, which imposes the necessity of altering the generic character. It must now read: Capsule 2-celled, 1–4-seeded.

The *facies* of the genus refers principally to the first species; the second has more the appearance of a Cuscuta, but the flowers are also closely sessile.

1. Lepidanche Compositarum.—Stems before flowering orange colored, soon decaying. (*Cuscuta glomerata*, Choisy, Mem. Soc. Nat. Hist. Genev., ex adnot. A. Gray.)

2. Lepidanche adpressa, *n. sp.*—Flowers sessile, glomerate, 5-parted; calycine scales seven to nine, imbricated, appressed, ovate or orbiculate, slightly crenulate, the outer ones the largest; tube of the corolla cylindric, a little longer than the calyx, twice as long as the oblong obtuse spreading lobes; stamens shorter than the limb; scales laciniately pinnatifid, convergent, covering the ovary; ovary with the stylopodium equaling the styles; capsule globose, shortly acuminate, covered by the marcescent corolla; 2–4-seeded. (*Cuscuta compacta*, Choisy, l. c., ex adnot. A. Gray. *C. coronata*, Beyr. ap. Hook.?)

I discovered this species last autumn, in the fertile shady woods on the banks of the Mississippi, amongst a most luxuriant growth of vines and underbrush, on Bignonia radicans, Rhus toxicodendron, Laurus Benzoin, Vitis, Cornus, etc. Choisy describes it from specimens collected in Alabama.

The flowers are closely sessile, but distinct, and not in such dense clusters as in *L. Compositarum*. The glomerules either form a continuous line round the stem of the parent plant, or they are separate, consisting of from five to ten or more greenish white flowers. The filiform stout stems are whitish, and do not entirely disappear at the flowering time. The capsules are generally 2-seeded; but as they are not so crowded as in the other species, they are also found 3–4-seeded.

Plate VI, Vol. xliii.—The tube of the flower, fig. 4, ought to be a little shorter. The lobes of the corolla, fig. 18, are too wide at base; they should be more oblong. The ovary, fig. 24, should be depressed like that in fig. 28. The calyx-segments ought to be marked in fig. 25.

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Art. IX.—*On the Ice Mountain of Hampshire County, Virginia, with a proposed explanation of its low temperature.*

by C. B. Hayden.

A mountain possessing a temperature so independent of all external causes, as to *permanently preserve ice*, within a few inches of its surface, unaffected by the vicissitudes of the seasons, or diurnal variations of temperature, was too singular and striking a phenomenon, not to have early attracted observation. The Ice Mountain has hence received frequent notice, but of so indefinite and frequently exaggerated a character, as to fail to produce a general belief in its existence, or to secure it that interest which this rare curiosity so richly merits. The Ice Mountain is one of the subordinate ridges of the Cacasson Mountains, and is a continuation of the North River Mountain; the latter consists chiefly of sandstones, and constitutes the western portion of an anticlinal axis, which at its commencement, many miles south of the Ice Mountain, is low and symmetrical. As this axis proceeds north it becomes more developed, and loses its symmetry, the rocks on the western side having a much greater inclination than the corresponding ones on the eastern. This inclination of the rocks, constituting the western side of the axis, rapidly increases with its development, until they become perpendicular, and form a distinct ridge, which in its continuation forms the Ice Mountain. It rises to the height of seven or eight hundred feet, forming a mural precipice, whose cragged summits split and rent, shoot suddenly up into sharp turreted spires, or jagged pinnacles, resembling the battlements of a Gothic castle, or the minarets of a mosque. At other times, losing this wildness, it is as remarkable for its singular symmetry, as before for its fantastic irregularity. Still retaining its precipitousness, it rises to the height of several hundred feet; its uniform summit, and rude massive symmetry, its steep rocky sides, devoid of vegetation, save where some stinted pine has "cast anchor in the rifted rock," all combine to give it the character of a huge Cyclopean wall. This singular structure has been thus minutely described, both from the unique and imposing scenery to which it gives rise, and from the connexion it is supposed to have with the phenomenon of the Ice Mountain. At the Ice Mountain, the

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59-74. Mar. 10. 1880.

III.

PAPERS ON CUSCUTINEÆ.

I. A MONOGRAPHY OF THE NORTH AMERICAN CUSCUTINEÆ.

From the American Journal of Science, Vol. XLIII. No. 2, October, 1842.

Transact. in Archives de Flore, —— pp. 65-79

In directing my attention to the different forms of Cuscuta of this vicinity, I was surprised to find several distinct species, as well as a remarkable allied genus, while only a single species, the *Cuscuta Americana*, is noticed in botanical works. Having been induced to examine particularly as well the species of this neighborhood, as the specimens with which my correspondents in different parts of the country have favored me, I offer the result of my investigations to the public, with the view of directing the attention of botanists throughout our wide-spread country to the subject; trusting that this neglected tribe of plants may thereby be further elucidated. I therefore avail myself of this opportunity to request botanists in different parts of the country to communicate specimens of the Cuscutæ of their vicinity, accompanied by the plant on which they grow.

ORDER CONVOLVULACEÆ, *R. Br.* TRIBE 2. CUSCUTINEÆ, *Link.*

Leaves reduced to scales. Embryo spirally rolled around a mucilaginous albumen, without cotyledons.

This remarkable tribe is appended to *Convolvulaceæ*, and bears to that family the same relation which *Monotropeæ* bear to *Pyrolaceæ*, and *Orobancheæ* to *Antirrhineæ:* these plants, which may be likened to Phanerogamous Fungi, being all destitute of verdure and of proper leaves (bearing scales in place of the latter, but never leafless in the full meaning of the term); while in the structure of their flowers they agree with plants of the highest organization. They are all parasitic on other vegetables; the *Cuscutineæ* on their stems; most *Orobancheæ* on their roots; and the *Monotropeæ* on their mouldering remains: hence they are obviously analogous to the class *Entozoa* of the animal kingdom; and may be termed *Epiphyta*, growing on plants.

The Cuscutineæ are distinguished from other Epiphyta by their growing on and twining around the stems (and occasionally the leaves) of other plants, as well as by their large seeds, resembling those of Convolvulus, but presenting a long and slender embryo, which is spirally coiled around a mass of mucilaginous albumen. *Monotropeæ* and *Orobancheæ* have extremely [334] minute seeds, in some respects similar to the spores of Acotyledonous plants. The seeds of Cuscutineæ germinate in the ground; but soon finding the plants round which they twine (turning constantly to the left, like all Convolvulaceæ), they strike their papillose roots into the epidermis of the stem, from which they subsequently derive their nourishment; their own original stems soon withering away, so that the plant is no longer in direct communication with the earth.

Mo. Bot. Garden
1904.

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As in the *Entozoa*, the same species inhabits only the same or some nearly related animal, so in the *Epiphyta*, each species is for the most part restricted to the same or similar plants. This is more constantly the case in *Orobancheæ*, where the germinating embryo fixes itself at once upon its favorite plant; but in Cuscuta, where the seed germinates in the ground, and the stem afterwards lays hold of the plant which affords its nourishment, it frequently twines around all the plants in the neighborhood, and is capable of extracting from them its food. Some species, however, are more constant in their predilections than others; as, for example, the European *Cuscuta Epilinum*, which never grows on any other plant than Flax; and our *Lepidanche Compositarum*, which is confined to *Solidago*, *Helianthus*, and some other *Compositæ*. Yet several, like the European *Cuscuta Epithymum* and the American *C. Polygonorum*, live promiscuously on most plants within their reach, evidently preferring, however, some particular species or genus, and seldom found except in its immediate vicinity. I have therefore ventured, as far as practicable, to name the species of Cuscuta after the plant upon which they grow; in accordance with the nomenclature frequently adopted of late in the case of parasites, especially in the genus *Orobanche* (Examp. *Orobanche Galii, O. Eryngii, O. Scabiosæ, O. Salviæ*, etc.) — thereby designating an important circumstance in the history of the plant.

Before I proceed to describe the North American species known to me, it may be well to present a general

Conspectus of the species that have come under my observation.

I. CUSCUTA, *L.* Sepals united into a 4–5-cleft calyx.

§ 1. *Styles united into one.*

1. C. MONOGYNA, *Vahl.* — Eastern Europe.

§ 2. *Styles two.*

* *Stigmas filiform. — European.* [335]

† *Flowers generally pentamerous.*

2. C. EPITHYMUM, *L.* Segments of the calyx and corolla acuminate. — Europe.
3. C. EPILINUM, *Weihe.* Flower globose: segments of the calyx and corolla orbicular, abruptly acuminate. — Europe.
4. C. PLANIFLORA, *Tenore.* Flower campanulate, open. — Italy.

†† *Flowers generally tetramerous.*

5. C. EUROPÆA, *L.* Lobes of the calyx and corolla obtuse. — Europe.

* * *Stigmas capitate. — American.*

A. Corolla cylindric, its remains covering the ripening capsule.

† *Flowers generally pentamerous.*

6. C. CHILENSIS, *Ker.* Corolla much longer than the campanulate calyx: anthers sessile. — Chili.

†† *Flowers generally tetramerous.*

7. C. CEPHALANTHI. Lobes of the calyx and corolla obtuse: anthers with filaments. — St. Louis.
8. C. CORYLI. Lobes of the calyx and corolla acute. — St. Louis.

B. Corolla campanulate, its remains persistent at the base of the ripening capsule.

† *Flowers generally pentamerous.*

9. C. VULGIVAGA. Carinate lobes of the calyx and the lobes of the corolla obtuse. — Vermont to Georgia and Missouri.
10. C. SAURURI. Smooth, lobes of the calyx and corolla obtuse. — Western New York to Missouri.
11. C. PENTAGONA. Lobes of the 5-angled calyx smooth, roundish; those of the corolla acuminate. — Virginia.
12. C. VERRUCOSA. Lobes of the campanulate calyx verrucose, roundish; those of the corolla acuminate. — Texas.

†† *Flowers generally tetramerous.*

13. C. POLYGONORUM. Lobes of the calyx and corolla acute. — St. Louis.

II. LEPIDANCHE. Calyx consisting of 10–15 imbricated sepals.

1. L. COMPOSITARUM. Western United States.

(1.) CUSCUTA, *L.* (DODDER.)

Calyx monosepalous, 4–5-cleft, persistent. Corolla campanulate or urceolate, 4–5-cleft. Styles one or two. Capsule 2-celled, 4-seeded.

Twining parasitic plants, bearing the general character of the family. The stem is filiform, simple or generally branched, of a whitish, yellowish, or orange color, with scaly leaves. The inflorescence is a cyme (with a central flower opening first, and axillary or lateral flowers, which open afterwards), with whitish sessile or pedunculate flowers, more or less clustered (conglomerate) in some, and rather loose (commonly called paniculate) in other species. Some bracts are observable on the peduncles and pedicels, but they are always easily distinguished from the calyx.

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the corolla, they bear a scale, which
They are present in all the species w
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TA CEPHALANTHI, n. sp.: stem high,
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TA CORYLI, n. sp.: stem branching; f
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TA VULGIVAGA, n. sp.: stem branched;
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The first or central flowers of the inflorescence are mostly 5-parted, but the lateral or secondary ones are in some species regularly 4-parted, in others nearly always 5-parted. The calyx is constantly monosepalous, [336] deeply and somewhat irregularly 4- to 5-parted, and persistent.

The corolla is cylindric, urceolate, or campanulate, with the limb erect, spreading or reflexed, and together with the stamina either persistent at the base of the capsule, or more frequently separated from its insertion and covering its summit. Its texture is in some species nearly membranaceous, in others thicker and more fleshy.

The stamina are united with the tube of the corolla up to the base of the segments. Near their base, within the tube of the corolla, they bear a scale, which is evidently not a distinct organ, but only an appendage of the stamina. They are present in all the species which I have examined; sometimes consisting only of one or few teeth on both sides of the filament (as in C. Coryli), but commonly forming a distinct lamina. In some they are bifid, in others undivided; but in all either crenulate or fimbriate, or laciniately or pinnatifidly divided. They are erect and appressed to the tube in several species; while in others they are convergent, closing the tube and including the ovary.

The ovary is always 2-celled, 4-ovulate; the styles two (in a single species united into one), frequently unequal in length; in a few cases supported by a stylopodium. The stigma is either filiform, as in the European, or capitate, as in the American species.

The capsule is globose or depressed, crowned by the persistent styles and stylopodium (when the latter is present); it is 2-celled, and sometimes 4-seeded; but more generally by abortion, 3-, 2-, and even 1-seeded. In the European species, it separates by circumscission from its base, leaving the dissepiment persistent on the calyx. In the American, the capsule does not appear to open regularly, but it separates easily from the calyx when ripe.

I have seen very few abnormal irregularities in the flowers of Cuscuta. Sometimes one or more segments of the corolla are partially or entirely changed into a stamen, and the capsule is occasionally 3–4-carpellary, instead of 2-carpellary.

1. CUSCUTA CEPHALANTHI, n. sp.: stem high, branching; flowers somewhat pedunculate, mostly 5-parted; tube of the corolla cylindric (after flowering ventricose), twice the length of the obtuse spreading segments, and of the ovate obtuse lobes of the calyx; stamens shorter than the limb; the scales ovate, laciniate, nearly appressed; [337] styles equal to the depressed ovary; capsule depressed, covered by the remains of the corolla.

On Cephalanthus; also on Vernonia, Aster, Bœhmeria, and other plants (especially Compositæ), on the margin of ponds and swamps near St. Louis, where it is the most common species. I have observed it since 1833; but have only met with it in the immediate vicinity of Cephalanthus. July to September.

The whole plant is whitish or pale yellow; the stem high and much branched; the flowers sometimes clustered and nearly sessile, but generally more or less pedunculate, and disposed in compact or rather loose cymes. The divisions of the calyx are very unequal, ovate, or roundish, obtuse, rarely with a little point, covering only the lower half of the tube. The tube itself is perfectly cylindrical in the young flower; but afterwards swells by the enlargement of the ovary, and becomes somewhat urceolate. The lobes of the corolla are ovate, obtuse, somewhat auricled at the base, and campanulate or spreading, half as long as the tube, but longer than the stamina. The corolla is membranaceous, not fleshy. The flowers are mostly 5-parted; but the latest ones of the season are often 4-parted, or even 3-parted. The ripe capsule separates easily from the calyx, apparently without bursting.

2. CUSCUTA CORYLI, n. sp.: stem branching; flowers peduncled, subumbellate, mostly 4-parted; tube of the corolla cylindric, equal in length to the ovate acutish crenulate inflexed lobes, and the acute carinate segments of the calyx; stamens a little shorter than the limb; the scales appressed, bifid, consisting of few teeth; styles as long as the ovary with the stylopodium; capsule depressed, covered with the remains of the corolla, crowned by the stylopodium and the reflexed styles. Var. β. STYLOSA: styles much longer than the ovary, exserted.

On Corylus, in the barrens west of St. Louis, in August and September. β. On Solidago, in dry prairies near St. Louis.

This species is nearly related to the foregoing, but may be easily distinguished by the shape and proportions of the calyx and corolla, and by the stylopodium on the ovary. The corolla is fleshy, not membranaceous, [338] and finely crenulate; the lobes always erect and somewhat incurved. The scales of the filaments are smaller than in any other of our Cuscutæ, and consist of one or two teeth on each side of the filament (where it adheres to the tube), thereby indicating the true nature of these singular "nectaria." It appears to be rarer than the other species, and grows more on dry ground.

3. CUSCUTA VULGIVAGA, n. sp.: stem branched; flowers pedunculate, somewhat glomerate or more lax, generally 5-parted; tube of the corolla deeply campanulate, longer than the pellucid-punctate open (finally reflexed) lobes, and the roundish, carinate, obtuse and slightly crenulate segments of the calyx; scales convergent, fimbriate, united at the base; styles about as long as the ovary (with the stylopodium); the remains of the corolla persistent at the base of the sub-globose capsule.

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ata: flowers in loose cymes. β. GLOMERATA
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is apparently not only the widest range of all t
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a, n —!, *J. Carey;* Alabama, on Salix and
from Vermont, on Leersia, and New Hampsh
Tex, *J. Carey.*
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Linnæus himself (Spec. Plant. ed. 1, p. 124), r
clares two distinct species. Which of them i
"Cuscuta floribus pedunculatis." Michaux, (I.,
38): "C. fl. pedunculatis umbellatis 5-fidis."
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to Sloane, Hist. I., t. 128, f. 4. After him Ja
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Saururi, n. sp.: stem low, branching; flowe
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and C. Coryli, which are the earliest flowering

TRAGOSA, n. sp.: stem branched; flowers pe
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capsule ——.
e Tragia, Norfolk, Virginia, *Mr. Rugel;* comm
ows in a wet prairie; flowering in April, *F.*

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Var. *a.* LAXIFLORA: flowers in loose cymes. *β.* GLOMERATA: flowers conglomerate. *γ.* TETRAMERA: flowers in umbelliform cymes, 3–4-parted.

This species has apparently not only the widest range of all the American Cuscutæ, but is less restricted to the same genus or family of plants. Indeed I have scarcely met with it twice upon the same species. Var. *a.* is the southern and western form: Western New York on Decodon, *Dr. A. Gray;* Missouri on Cephalanthus and Amphicarpæa, and Georgia, on —— ?, *J. Carey;* Alabama, on Salix and Aster, *S. B. Buckley.* Var. *β.* is the northern form: my specimens are from Vermont, on Leersia, and New Hampshire, on Solidago, both from *Mr. J. Carey.* Var. *γ.* Connecticut, on Urtica, *J. Carey.*

The *Cuscuta vulgivaga*, is perhaps in part the Cuscuta Americana of Linnæus, and of many later botanists. But their diagnoses are too incomplete to decide the point, and different species undoubtedly have been confounded under this name. Even Linnæus himself (Spec. Plant. ed. 1, p. 124), referring to Gronov. Virg. and to Sloane, Hist. I., p. 201, t. 128, f. 4, confounds two distinct species. Which of them is to be the *C. Americana?* Linnæus has only the following words: "Cuscuta floribus pedunculatis." Michaux, (I., 175): "Cuscuta, floribus pedicellatis, pentandris." Pursh (I., 116): "C. fl. pedunculatis umbellatis 5-fidis." Other botanists add, "stigmatibus capitatis." [339] Nuttall, gen. (II., addit.) on the other hand has it: "flowers mostly pentandrous and sessile;" and Sprengel (Syst. Veg. I., 864) brings his C. Americana under the section with glomerate subsessile flowers. While these authors refer to one or more North American species, others apply the name with at least equal justice to a West Indian plant. Linnæus himself cites Sloane, Hist. I., t. 128, f. 4. After him Jacquin (Stirp. Am. p. 24), Swartz (Obs. p. 54), and others describe a West Indian species. The name may therefore properly be reserved for Sloane's plant, or may be discarded altogether. The only reason I have in supposing that most North American authors give it to *Cuscuta vulgivaga*, is that this is the most common and the widest spread species in the United States, and has generally the flowers longer-peduncled than any other.

This Cuscuta is intermediate between C. Cephalanthi and C. Saururi. In all three the lobes of the calyx and corolla are obtuse, and the former shorter than the tube of the corolla. But our plant is distinguished from both by the carina of the lobes of the calyx, which is formed by larger uneven prominent cells, and by the large pellucid dots in the substance of the corolla, which may be mistaken for glands, but are nothing but cells larger than the rest of the tissue. The carinæ of the calyx are most prominent on the three outer lobes, and sometimes hardly perceptible on the two inner; but even then the large irregular cells are easily distinguished by the lens. The lobes of the corolla are shorter than the tube, as in C. Cephalanthi: the scales are large and incurved, and the corolla remains at the base of the capsule, as in C. Saururi. The tube is campanulate, but deeper than in C. Saururi or C. Polygonorum. The flowers and fruit are larger than in Cephalanthi, and (especially in var. *a.*) nearly of the same size as in C. Saururi. The styles are in some specimens a little longer, in others a little shorter than the ovary, which appears to be crowned by a stylopodium: this however it is hardly possible to ascertain satisfactorily in the dried specimens.

4. CUSCUTA SAURURI, n. sp.: stem low, branching; flowers 5-parted, somewhat pedunculate, at length in spikes; tube of the corolla campanulate, equal to the obtusish campanulate or spreading lobes, and longer than the obtuse segments of the calyx; stamens as long as the limb; the scales pinnatifid-laciniate, convergent, covering [340] the ovary; styles as long as the ovate-globose ovary with the stylopodium; remains of the corolla persistent at the base of the subglobose capsule.

Margin of lakes and swamps, in the "American Bottom" opposite St. Louis, on Saururus, where it was discovered in September, 1841, by my friend, Ch. Geyer, the indefatigable botanist who has signalized himself in the Northwestern Expedition of Mr. J. N. Nicollet in 1839. Alabama, *Dr. A. Prout.* Texas, on Bœhmeria, Polygonum, &c., *F. Lindheimer.* A variety with rather larger calyx-lobes, in other respects perfectly agreeing with the above description, was obtained by Dr. A. Gray, in Western New York (also on Saururus?).

This species bears a great resemblance to C. Polygonorum; but differs from it in the much stouter stems, the greater size of the flowers, the larger convergent scales, and the stylopodium on the ovary. The stems are one-third of a line or more in diameter, and are stouter than in any other of our species. It is the latest species in blossom, the flowers not appearing before the beginning or middle of September; while C. Polygonorum commences in August, and C. Cephalanthi and C. Coryli, which are the earliest flowering species of our neighborhood, are in bloom by the end of July.

5. CUSCUTA PENTAGONA, n. sp.: stem branched; flowers pedunculate, subumbellate, small, 5-parted; tube of the corolla open-campanulate, shorter than the long acuminate lobes, and the smooth, roundish, obtuse lobes of the 5-angled calyx; stamens shorter than the limb; the scales ovate, fimbriate, convergent; styles filiform; about equal to the globose ovary; capsule ——.

On Euphorbia or Tragia, Norfolk, Virginia, *Mr. Rugel;* communicated by Dr. Gray. Also near Houston, Texas, on different low herbs in a wet prairie; flowering in April, *F. Lindheimer.* Beardstown, Illinois, in sandy soil, *Ch. Geyer.*

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This species bears some resemblance to the C. Polygonorum, to which it is related by the campanulate flower and the acute lobes of the corolla; but is easily distinguished by the small size of the flowers, the 5-angled calyx whose lobes are not triangular, but roundish and obtuse. The angles are formed by the margins of the [341] lobes of the calyx and correspond with the petals, while in C. Coryli the five angles formed by the five prominent midribs alternate with the lobes of the corolla.

6. CUSCUTA VERRUCOSA, n. sp.: stem low, branching; cymes loose, few-flowered; flowers (small) long-peduncled, 5-parted; tube of the corolla campanulate, shorter than the lanceolate acuminate lobes, and nearly equal to the ovate subacute segments of the verrucose or somewhat hispid calyx; scales ovate, fimbriate, equalling the tube; styles as long as the ovary; capsule globose, surrounded at the base by the persistent corolla.

Var. *α.* HISPIDULA: inflorescence, and frequently also the branches, hispid or glandular-pilose; lobes of the calyx acute, shorter than the tube of the corolla.

β. GLABRIOR: cymes more or less glabrous; lobes of the calyx broader, somewhat obtuse, nearly as long as the tube of the corolla.

Texas: var. *α.* in dry sterile prairies, west of Houston, on Euthamia, Schrankia, Aster, Ambrosia, Evolvulus, and other low herbs; flowering in April and May, *F. Lindheimer*. *β.* with the preceding variety, *F. Lindheimer:* on Petalostemon, *Drummond* (3d collection, No. 247).

This species is the lowest of all the American Cuscutæ, and has, together with the foregoing, the smallest flowers. It grows on open prairies, in dry soil. In all these respects, therefore, it takes in Texas the place of *Cuscuta Epithymum* in Europe. Like that species, it is not restricted to a few plants, but appears to creep over everything in its way. It is the only Cuscuta known to me with any appearance of pubescence.

Stem from 4 to 6 inches high, smooth (*β.*) or more or less hispidly pubescent with pellucid vesicular hairs, (*α.*) especially in the inflorescence; peduncles filiform, many times longer than the flowers; calyx always rough, but the vesicles less hair-like, more glandular, or when dry like warts. In flowering, the calyx is campanulate, or even somewhat turbinate, but soon after assumes a hemispherical shape, which is the one figured in the plate. Lobes of the corolla very acute, spreading, white; after flowering the tips incurved, turning brown. Stigmas globose, purplish-brown.

This Texan species is nearly related to C. pentagona: the size of the flowers, shape of corolla and the [342] scales, are the same; but it is easily distinguished by the loose and few-flowered cyme, and by the tuberculate or hispid campanulate (not pentagonous, smooth, and membranaceous) calyx.

7. CUSCUTA POLYGONORUM, n. sp.: stem low, branching; flowers subsessile, glomerate, mostly 4-parted; tube of the corolla campanulate, nearly equal to the acute campanulate or spreading lobes and the acutish segments of the calyx; stamens as long as the limb; the scales mostly bifid, laciniate, appressed; styles as long as the depressed ovary; remains of the corolla persistent at the base of the depressed capsule.

On different species of Polygonum, also on Lycopus, Penthorum, and other plants in the neighborhood; August and September.

This is a much lower plant than C. Saururi, etc., with orange-colored stems, twining round the Polygona in overflowed places, the bottoms of sink-holes, or margins of ponds, west of St. Louis, where in the year 1839 my friend F. Lindheimer — now in Texas, to whose zeal and kindness I owe many specimens from that interesting country — first discovered it. In the following year I found it on the banks of Illinois River, near Peru, in thickets formed by immense Ambrosiæ, with Bidens, Spartina, etc. Whether any Polygonum was there I cannot recollect, having at the time paid no particular attention to this point. The flowers of the specimens from Peru are a little more peduncled, and the very acute segments of the calyx rather longer than the tube of the corolla; but I observe no other difference.

This and C. Saururi are easily distinguished from the others by their orange-colored stems, their larger open campanulate flowers, with the remains of the corolla always at the base of the capsule. The scales of the filaments in C. Polygonorum are intermediate between C. Coryli and C. Cephalanthi in shape, but are more laciniate than in the former. They are appressed to the corolla, so that the large depressed ovary appears naked in the open tube, while in C. Saururi it is covered by the convergent or inflexed multifid scales.

NOTE. — Since the manuscript of this article has been communicated to the American Journal, my attention has been directed to one or two species of Cuscuta indicated by the late Mr. Beyrich, and mentioned by Sir William Hooker in his [343] excellent *Flora Boreali-Americana* (Vol. II. p. 77), and in the first volume of the *Companion to the Botanical Magazine*.

C. umbrosa of Beyrich, in herb. Hook. (Fl. Bor.-Am., l. c.), from Canada, the Northwest Coast, as well as the United States, I am unable to determine from the characters given. It may be either my C. Saururi, or C. vulgivaga, *β.* glomerata: the length of the styles does not appear to afford constant characters in this genus.

C. arvensis of Beyrich, in herb. Hook. (C. Americana? *Hook. Fl. Bor.-Am.*, l. c.), is perhaps my C. vulgivaga, *α.* laxiflora. According to Hooker, Douglas collected it in Oregon.

C. coronata of Beyrich, in herb. Hook., is enumerated but not characterized in *Hook. Compan. to Bot. Mag.*, I. p. 173 (New Orleans, Drummond, 1833), on the stems of Laurus Carolinensis.

C. Epilinum, Weihe, has been introduced, with flax, into some parts of this country, especially Chester County, Pennsylvania; *fide Darlington, Flora Cestrica*, ed. 2.

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(2.) LEPIDANCHE,[1] *N. Gen.*

Calyx consisting of many imbricated scales, persistent; corolla tubular, 5-cleft; styles two; capsule 2-celled, 2-seeded.

Very similar to Cuscuta when young, but different in appearance when in flower or fruit. The stem which connects the different clusters of flowers having then disappeared, the latter only remain, consisting of innumerable crowded sessile flowers and scarious scales, spirally and most tightly coiled (with one or several turns) around the stems of the supporting plant, which at a distance appears as if a rope were twisted round it. The flowers are so crowded that many are abortive, and as it were strangled, presenting nothing but a bunch of scales, and others, which are apparently perfect, do not mature seed.

The principal difference between this genus and Cuscuta consists in the calyx, which is not monosepalous, but is composed of numerous imbricated scales; of which the two or five exterior, being much smaller, may be considered as bracts; while the ten inner, which are nearly equal in size and shape, crenulate, and with reflexed or squarrose summits appear to constitute the proper calyx. The corolla and stamens, with their scales, are entirely similar to the corresponding organs in Cuscuta: so is the ovary; but the unequal styles are generally longer in proportion, and the stylopodium is as large as the ovary proper, or even larger. The ovary is 2-celled and 4-ovulate; [344] but I have never seen more than two seeds, separated by the incomplete dissepiment; and frequently only a single seed ripens.

1. LEPIDANCHE COMPOSITARUM: stem low, branching; flowers closely sessile, conglomerate, 5-parted; tube of the corolla nearly cylindrical, longer than the squarrose imbricated calyx, which consists of ten to fifteen scales, twice as long as the oblong obtuse spreading or reflexed lobes of the corolla; stamens equal to the limb, exserted; scales pinnatifidly laciniate, convergent, covering the ovary; styles twice as long as the ovary with the stylopodium; capsule globose, enveloped by the scales of the calyx, crowned by the stylopodium and styles, and covered by the remains of the corolla.

Var. *α*. SOLIDAGINIS: flowers smaller; lobes of the limb reflexed; stylopodium half as large as the ovary.

Var. *β*. HELIANTHI: flowers larger; lobes of the limb spreading; scales of the filaments united with one another forming a 5-lobed crown in the tube; stylopodium larger than the ovary.

This singular plant appears to be peculiar to the Western prairies. I have observed it since 1833 in wet prairies around St. Louis,[2] on Solidago (also on Vernonia, *Ch. Geyer*), and Dr. Clapp has found it on Silphium at New Albany, Indiana; the second variety I have gathered on Helianthus since 1838 in similar localities; flowering in August and September. These varieties may prove distinct species, but for the present I am unable to distinguish them by more important characters than those given above.

The flowers are always 5-parted; the tube is not exactly cylindrical, but a little wider at the mouth than at the base, rather obconic. The styles are longer than in any of our Cuscutæ, and almost always unequal; they are inserted on a distinct stylopodium, which is larger than in any Cuscuta. The stigma is capitate, as in all American Cuscutæ.

EXPLANATION OF PLATE VI. [Reproduced on p. 65.]

Figs. 1–6. CUSCUTA CEPHALANTHI. 1. A tetramerous; 2, a pentamerous flower. 3. Corolla laid open. 4. The ovary. 5. Vertical section of a half-grown capsule. 6. Capsule invested by the remains of the corolla.

Figs. 7–11. C. CORYLI. 7. A flower. 8. Corolla laid open. 9. Ovary and styles. 10. Same of var. *β*. 11. Capsule invested by the remains of the corolla.

Figs. 12–16. C. VULGIVAGA. 12–14. Flowers. 15. Corolla laid open. 16. Ovary.

Figs. 17–21. C. SAURURI. 17. The flower. 18. Corolla laid open, with the inflexed scales. 19. Ovary. 20. Vertical section of the half-grown capsule. 21. Mature capsule.

Figs. 22–24. C. PENTAGONA. 22. Flower. 23. Corolla laid open. 24. Ovary.

Fig. 25. C. VERRUCOSA. Flower.

Figs. 26–29. C. POLYGONORUM. 26. Flower. 27. Corolla laid open. 28. Ovary. 29. Capsule.

Figs. 30–35. LEPIDANCHE COMPOSITARUM. 30. Flower of var. *α*. 31. Flower of var. *β*. 32. Corolla of *β*. laid open. 33. Ovary and styles of var. *α*. 34. Same of *β*. 35. Capsule.

N. B. The flower represented in fig. 1 is a line in length; all the others are enlarged in the same proportion.

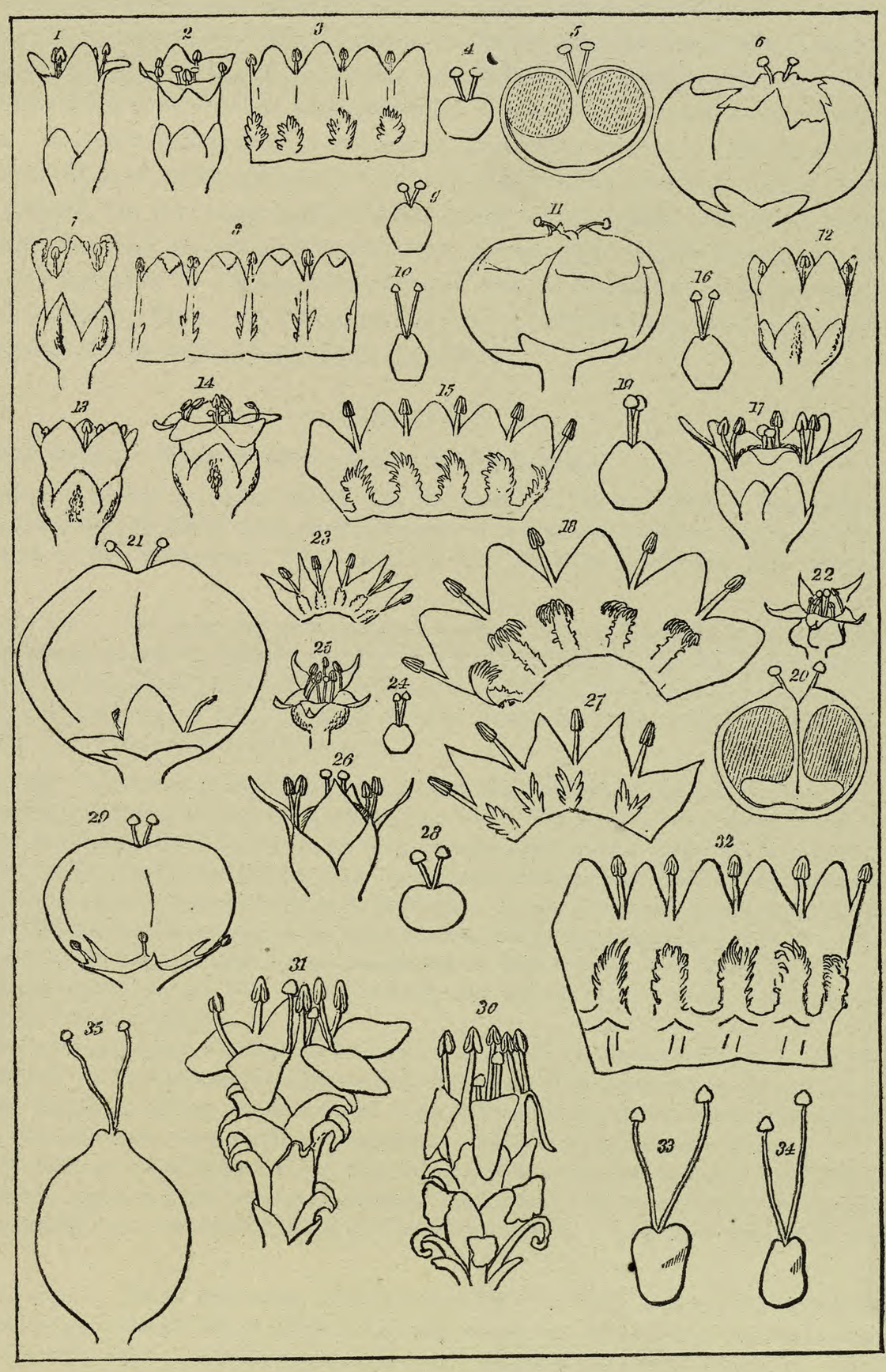
[1] From λεπίς, *a scale*, and ἄγχειν, *to strangle*: a scaly plant, strangling those on which it grows.

[2] This is manifestly the *Cuscuta Americana* (from St. Louis) of Hooker's account of Drummond's collections, in the *Companion to the Botanical Magazine*, I. p. 173; of which it is remarked that "some of the specimens seem to have all the flowers abortive and turned into scales, which are excessively crowded, and form a dense wreath of a pale straw-color around the branch of some shrub."

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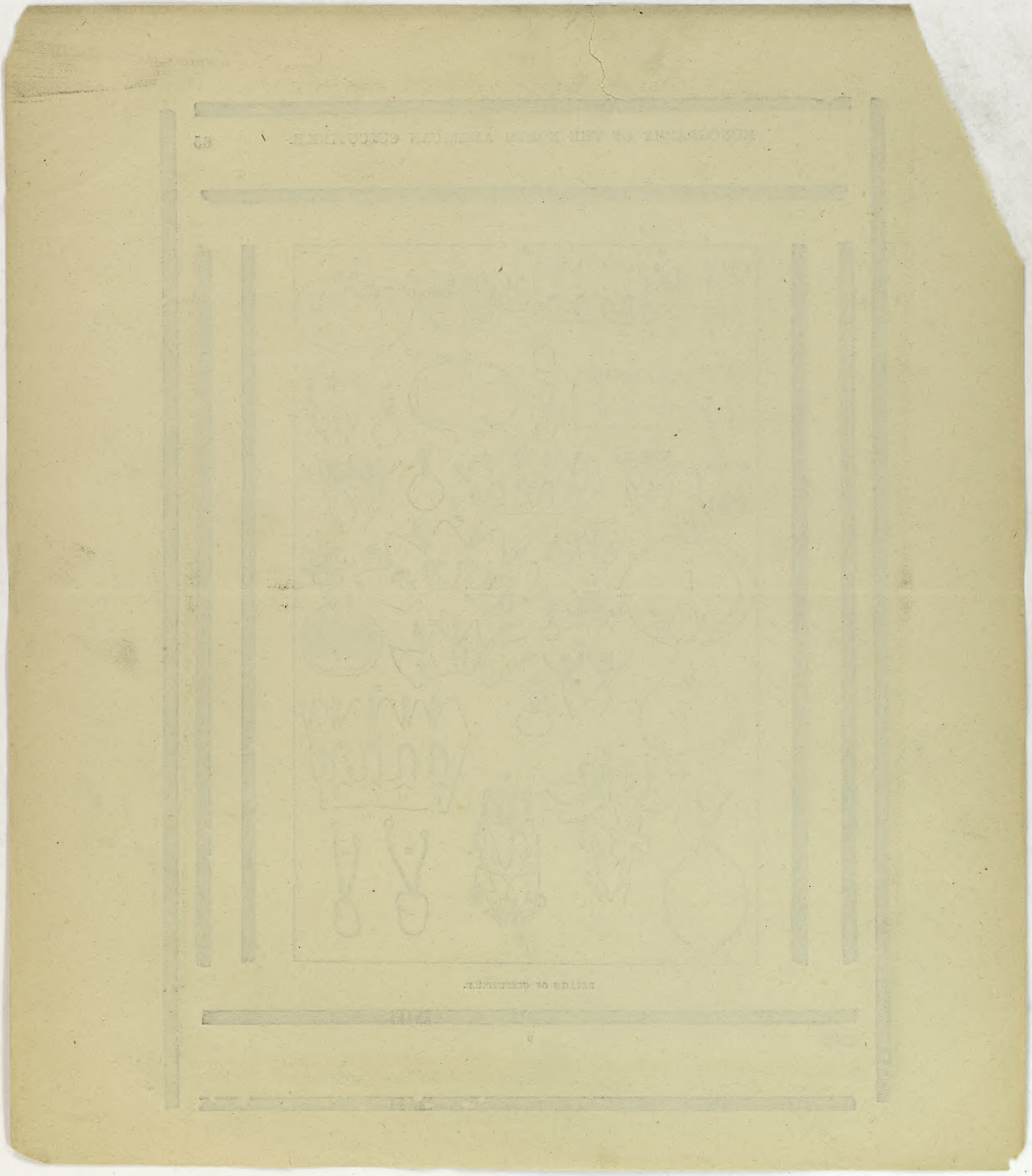
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DETAILS OF CUSCUTINEÆ.

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II. CORRECTIONS AND ADDITIONS TO THE MONOGRAPHY OF CUSCUTINEÆ, IN VOL. XLIII. OF THIS JOURNAL.[1]

From the American Journal of Science, Vol. XLV. No. 1, July, 1843.

A careful re-examination of this tribe during the past season, as well as the increased opportunity of examining specimens from different parts of North America, have discovered some errors, and made some corrections and additions necessary, which I should indeed prefer to withhold for the present, and subject to the test of another season's study, if it were not important to correct such errors as soon as possible. A fuller description of the new species, with figures, I defer to another time.

I am now convinced, that, although many Cuscutæ prefer some plants to others, yet there is no constancy in this respect, but the same species often grows upon a great variety of widely different plants. I did wrong, therefore, to name them from the genera upon which they grew; and I should much prefer to see the names of *C. Cephalanthi* changed into *C. tenuiflora*, *C. Coryli* into *C. incurva*, *C. Saururi* into *C. umbrosa*, Beyr.? *C. Polygonorum* into *C. chlorocarpa*, and *Lepidanche Compositarum* into *L. squarrosa*, if they had not yet been published.

I. CUSCUTA, *L.*

1. Cuscuta Cephalanthi. — Mostly 4-parted; frequently only 3-parted.

2. Cuscuta Coryli. — Found in many places near St. Louis, on Hazel, Willow, Desmodium, Teucrium, Solidago, etc. The *long* styles observed in some *dried* specimens of this as well as other species, are the consequence of a continued vegetation in the plant-press! The variety β. must therefore be stricken out. Flowers frequently 5-parted.

3. Cuscuta vulgivaga. — Certainly the most common species. The stylopodium is very remarkable in the living specimens which I have examined; and the capsule is oval, even a little pointed, less globose than in any other of our Cuscutæ; but I am not prepared to say that this is the case with all varieties of this very variable [74] species. The stamens and pistils are as long, or rather a little shorter than the corolla, but the latter are elongated after flowering. (*Cuscuta Americana*, Hooker?)

4. Cuscuta Saururi. — It is very probable that *Cuscuta umbrosa*, Beyrich, ex Hooker, is the same; which name must therefore be substituted for mine, though not quite appropriate. This plant is very nearly related to the former species, but can always be distinguished by the more open, campanulate corolla, which in *C. vulgivaga* is globose campanulate, the thinner texture of calyx and corolla, which is destitute of the pellucid dots, and the oblong lobes of calyx and corolla, which are always more or less orbicular in *C. vulgivaga*. Large, overgrown specimens of *C. vulgivaga* have sometimes the lobes of calyx and corolla as long as the tube, but can always be recognized by the above characteristics. Such specimens are those from Alabama and Texas, mentioned in this Journal, Vol. xliii. p. 340. The true *C. Saururi* I have only received from western New York, and from this neighborhood; where it grows in abundance on Polygonum, Saururus, etc. in a few localities.

I must mention here two specimens of a Cuscuta received from Mr. M. A. Curtis, collected, one in Massachusetts, the other in North Carolina. In their principal characters they agree with *C. Saururi*, but the flowers are much smaller and frequently 4-parted; the linear-oblong, obtuse lobes of calyx and corolla are rather longer than the tube; the filaments subulate, shorter than the limb; ovary with a stylopodium; styles short and thick; capsule?

An examination of more complete specimens and the living plants must show whether there is a constant difference between this eastern plant and the western *C. Saururi*. But I may here remark, that the eastern form of *C. vulgivaga* is also much smaller than our western form, and from Connecticut I have also received a tetramerous *C. vulgivaga*!

5. Cuscuta verrucosa. — Under this name I have confounded two Texan species: the description is chiefly taken from the following species, but the figure refers to this one, which was first collected by Drummond and afterwards by Mr. Lindheimer, both times on *Petalostemon multiflorum*. The description must be altered: — C. verrucosa:

[1] The characters of the new species, etc., here described, have been published in the *London Journal of Botany* for April, 1843, as an appendix to the original monograph, there reproduced. See also a French translation of the first paper, by F. Schultz, in *Archives de Flore*, 1855, I., pp. 65–79. — Eds.

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cymes umbelliform, compound; bracts ovate, somewhat obtuse, shorter than the pedicels; calyx somewhat acuminate, somewhat obtuse, shorter than the tube; ovary globose, composed of large irregular cells.

6. CUSCUTA HISPIDULA, n. sp. *Stem long peduncled (small), 5-parted; segments of the calyx, shorter than the limb; scales ovate, fimbriate, nearly equal.*

Texas, in dry and sterile prairies. Engelmann.

in Vol. XLIII. p. 341, under C

7. CUSCUTA

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cymes umbelliform, compound ; flowers peduncled (small), 5-parted ; calyx campanulate, verrucose ; segments ovate, somewhat obtuse, shorter than the globose-campanulate tube of the corolla ; lobes of the corolla long- [75] acuminate, somewhat longer than the tube ; stamens half as long as the limb ; scales ovate fimbriate, rather larger than the tube ; ovary globose, depressed, without stylopodium; capsule depressed. — The tissue of the corolla is composed of large irregular cells.

6. CUSCUTA HISPIDULA, n. sp.: stem low ; cymes loose, few-flowered, hairy or nearly smooth ; flowers very long peduncled (small), 5-parted ; tube of the corolla turbinate-campanulate, twice the length of the ovate subacute segments of the calyx, shorter than the long-acuminate somewhat crenulate spreading lobes ; stamens half as long as the limb ; scales ovate, fimbriate, nearly equalling the tube ; ovary with a stylopodium and short styles.

Texas, in dry and sterile prairies west of Houston. Flowering in April and May. Compare the remarks made in Vol. XLIII. p. 341, under *C. verrucosa*.

7. CUSCUTA NEUROPETALA, n. sp. : cymes umbelliform, smooth, flowers pedunculate (large), 5-parted ; tube of the corolla campanulate, nearly equal in length to the ovate-lanceolate acute carinate segments of the calyx, and the ovate short-acuminate one-nerved crenulate spreading lobes ; stamens rather shorter than the limb ; scales ovate, fimbriate, incurved, as long as the tube ; styles rather longer than the ovary with the stylopodium.

Texas, in wet prairies near Houston ; on different Compositæ, such as Liatris, Solidago, Helianthus, Rudbeckia, and on Myrica cerifera ; flowering in August ; *F. Lindheimer*.

Flowers rather large, but variable in size ; segments of calyx always very acute, ovate or ovate-lanceolate, somewhat shorter or a little longer than the tube of the corolla. Anthers yellow or purple ; stigmas purple.

This and the last species resemble in the structure of the corolla the more northern *C. Coryli ;* they have the same crenulated margin, the same fleshy-cellular texture, similar incurved tips of the acute lobes, and the same white color, which is not altered in well-dried specimens.

C. neuropetala is distinguished from *C. hispidula* by its perfect smoothness, its flowers being twice or three times as large, its more compact, umbelliform cymes ; the whole plant is taller (in my specimens twelve to eighteen inches high). The calyx segments, at least the three outer ones, are carinate ; the lobes of the corolla are [76] broader, shorter, composed of small linear cells, which are contracted in the middle into a distinct nerve. Stylopodium large in proportion to the ovary. Capsule not seen. The purple anthers and stigmas in the white flowers, give this species a very pretty appearance.

8. CUSCUTA PENTAGONA. — Capsule globose, somewhat depressed, without a stylopodium. The description is taken from the Virginia plant ; the forms from Illinois and Texas constitute two distinct varieties.

β. MICROCALYX : flowers shorter peduncled ; calyx not remarkably 5-angled, much shorter than the tube of the corolla. — Illinois.

γ. CALYCINA : flowers shorter peduncled ; calyx not remarkably 5-angled, longer than the tube of the corolla, which is equal to the acute lobes. — Texas.

This species bears some resemblance to *C. Polygonorum* on one side, and to the three foregoing species on the other; to these by the acuminate lobes of the corolla, to the first by the depressed ovary and pale greenish-yellow capsule ;[1] but it is distinguished from both by the orbicular lobes of the generally large and more or less pentagonal calyx. The inflorescence represents little umbels in α. or approaches the glomerules of *C. Polygonorum* in β. and γ. The lobes of the corolla are acute, resembling in shape those of the following species, in the Texan variety ; or longer and finely acuminate (similar to *C. verrucosa* and *C. hispidula*), in the more northern forms. Stamens short, only half the length of the limb ; anthers nearly globose. Scales large, ovate, fimbriate, sometimes exceeding the tube. Ovary and capsule depressed.

This is probably the earliest species in North America ; in Texas it has been found in bloom in April and May, and near Bardstown early in July ; while here, one hundred miles further south, hardly any other species begins to open its flowers before the last days of that month.

9. CUSCUTA POLYGONORUM. — Segments of calyx generally as long as the tube of the corolla, mostly subacute, but occasionally also somewhat obtuse ; the corolla is thin, membranaceous, composed of a very fine cellular tissue ; stamens broad at base, subulate ; scales smaller than any other species, except *C. Coryli*.

II. LEPIDANCHE.

Last autumn I discovered a second species of this genus, which imposes the necessity of altering the generic character. It must now read : Capsule 2-celled, 1–4-seeded.

The *facies* of the genus refers principally to the first species ; the second has more the appearance of a Cuscuta, but the flowers are also closely sessile.

[1] In all other species which are here mentioned, it is of a brown color, except perhaps in *C. Cephalanthi*, where it is also light-colored.

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1. LEPIDANCHE Comp
Choisy, Mem. Soc. Nat. Hist.

2. LEPIDANCHE Adpress
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globose, shortly acuminate, covered b
A. Gray. C. coronata, Beyr. ap
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1. LEPIDANCHE COMPOSITARUM. — Stems before flowering orange-colored, soon decaying. (*Cuscuta glomerata*, Choisy, Mem. Soc. Nat. Hist. Genev., ex adnot. A. Gray.)

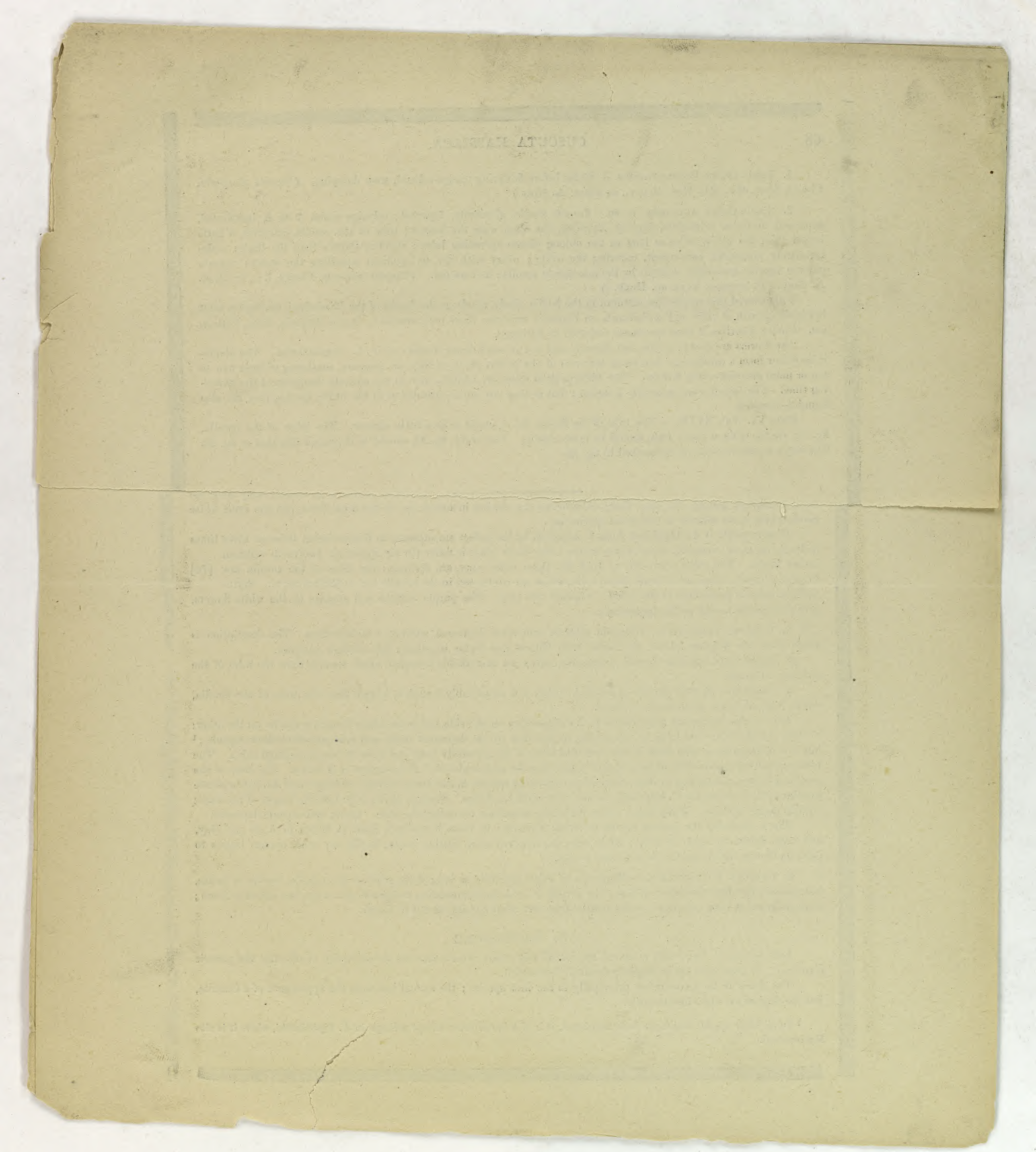
2. LEPIDANCHE ADPRESSA, n. sp.: flowers sessile, glomerate, 5-parted; calycine scales 7 to 9, imbricated, appressed, ovate or orbiculate, slightly crenulate, the outer ones the largest; tube of the corolla cylindric, a little longer than the calyx, twice as long as the oblong obtuse spreading lobes; stamens shorter than the limb; scales laciniately pinnatifid, convergent, covering the ovary; ovary with the stylopodium equalling the styles; capsule globose, shortly acuminate, covered by the marcescent corolla; 2–4-seeded. (*Cuscuta compacta*, Choisy, l. c., ex adnot. A. Gray. *C. coronata*, Beyr. ap. Hook. ?)

I discovered this species last autumn in the fertile shady woods on the banks of the Mississippi, amongst a most luxuriant growth of vines and underbrush, on Bignonia radicans, Rhus toxicodendron, Laurus Benzoin, Vitis, Cornus, etc. Choisy describes it from specimens collected in Alabama.

The flowers are closely sessile, but distinct, and not in such dense clusters as in *L. compositarum*. The glomerules either form a continuous line round the stem of the parent plant, or they are separate, consisting of from five to ten or more greenish-white flowers. The filiform stout stems are whitish, and do not entirely disappear at the flowering time. The capsules are generally 2-seeded; but as they are not so crowded as in the other species, they are also found 3–4-seeded.

Plate VI. Vol. XLIII. — The tube of the flower, fig. 1, ought to be a little shorter. The lobes of the corolla, fig. 18, are too wide at base; they should be more oblong. The ovary, fig. 24, should be depressed like that in fig. 28. The calyx-segments ought to be marked in fig. 25.

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III. UEBER CUSCUTA HASSIACA, Pf.

From the Botanische Zeitung, II. No. 32, August, 1844. Communicated by Alexander Braun.

Ein vor wenigen Tagen erhaltener Brief von Dr. Engelmann (datirt vom 28. Mai) enthält nachfolgende Bemerkungen über die von Dr. L. Pfeiffer im vorigen Jahre bei Kassel aufgefundene und im 41. Stück der bot. Zeitung desselben Jahres beschriebene *Cuscuta hassiaca*, welche nach den Mittheilungen von H. Mohl (bot. Zeit. 1843. 1. Stück) in demselben Jahre auch bei Weilmünster in Nassau vom Apotheker Rudio, und zwar in grosser Menge auf *Medicago sativa* beobachtet und nach einer kürzlich erhaltenen Mittheilung vom Apotheker Lehmann auch in der Gegend von Offenbach bei Frankfurt im vorigen Jahre vorgekommen ist. Ein so plötzliches Erscheinen einer vorher nie beobachteten Pflanze, gleichzeitig an mehreren entfernten Lokalitäten, musste den Gedanken an Einschleppung durch landwirthschaftliche Samen erwecken, welcher durch Engelmann's Mittheilungen Bestätigung findet. Die Kasseler Exemplare der *C. hassiaca*, auf deren Untersuchung sich Engelmann's Urtheil gründet, sind mir durch Hrn. Dr. Pfeiffer selbst zur Zusendung an denselben mitgetheilt worden.

Dr. Engelmann schreibt nun über diese Pflanze Folgendes: „Die übersendete *C. hassiaca* Pf. gehört, wie ich auf den ersten Blick sah, zu keiner der hiesigen (nordamerikanischen) Arten, dagegen ist sie ohne Zweifel identisch mit der *Cuscuta*, welche auf Ewigkleeäckern bei Genf gefunden und unter dem Namen *C. Chilensis* in verschiedenen Herbarien aufbewahrt wird. Von der wahren *C. Chilensis* Ker., von welcher ich Exemplare aus Chili verglichen habe, ist sie übrigens sehr verschieden, und Choisy in seiner Monographie der Cuscuten (Mémoires de la société d'hist. natur. de Genève. Vol. 9. part. 2, pag. 180.) erklärt sie für *C. corymbosa* Ruiz et Pavon, und giebt zugleich an,
dass sie auch bei Leyden verwildert vorkomme, und dass sie zunächst aus Piemont nach [554]
Genf gekommen sei. Nach Piemont sei sie mit Samen von *Medicago sativa*, den man unter dem Namen Alphapha für eine neue Futterpflanze gehalten, gekommen. Da Choisy's sowohl, als Pfeiffer's Beschreibung noch Einiges zu wünschen übrig lässt, ja erstere durchaus vag ist und die Pflanze nicht charakterisirt, so gebe ich eine neue nach Genfer Exemplaren (von Jack gesammelt) und Kasseler (von Pfeiffer mitgetheilt).

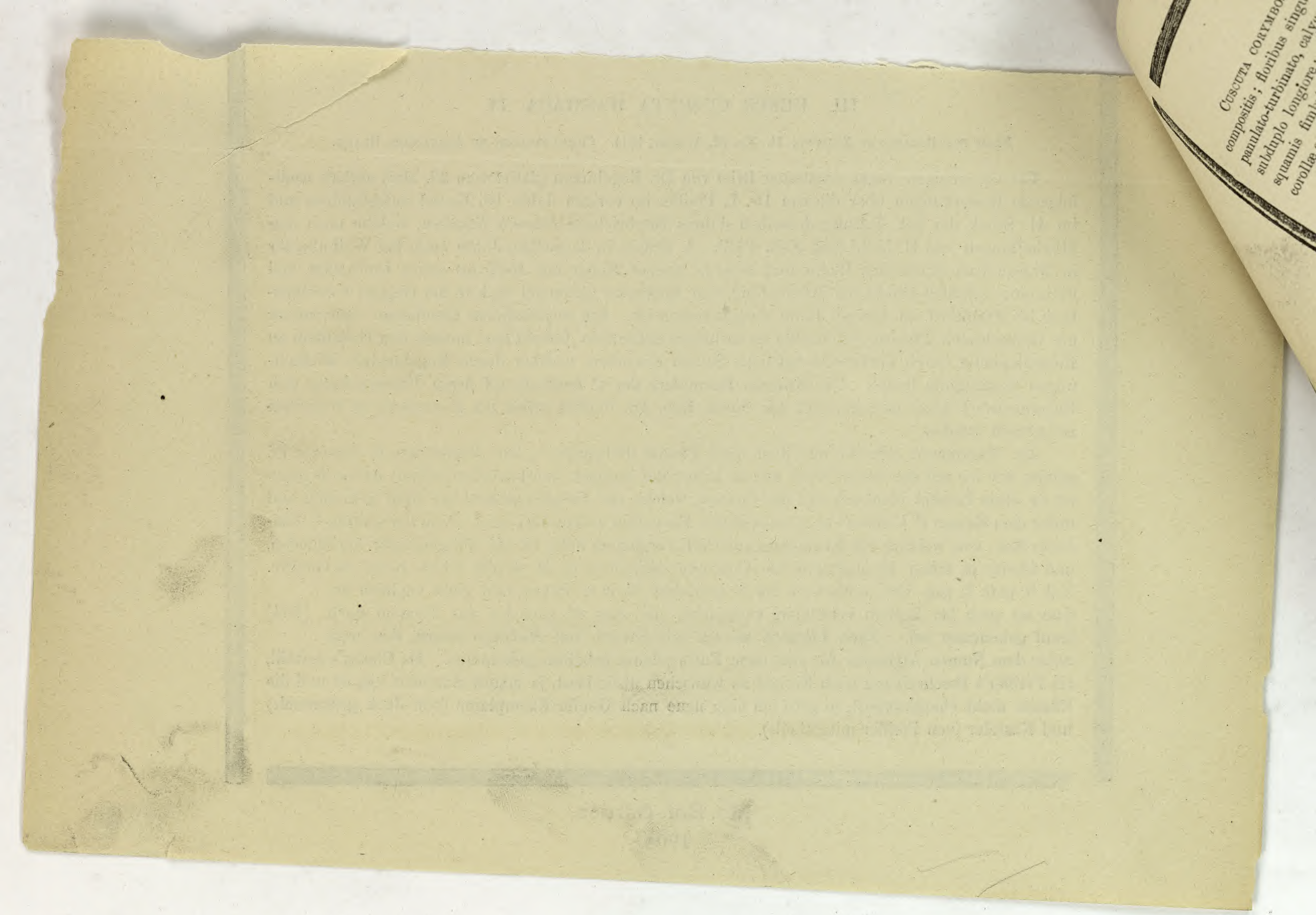
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Die Abbildung der *C. corymbosa* in Ruiz und Pavon t. 105. f. 6. kann ich übrigens leider nicht vergleichen; es bleibt daher noch einer genaueren Vergleichung vorbehalten, ob Choisy's Bestimmung der aus Chili nach Europa gewanderten Art richtig ist.

Ich füge diesen Mittheilungen meines amerikanischen Freundes blos noch die Bitte an die deutschen Botaniker bei, fernere Beobachtungen über das Vorkommen der eingewanderten *Cuscuta* mitzutheilen.

Carlsruhe, den 13. Juli 1844.

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Cuscuta corymbosa compositis; floribus singulis paulato-turbinato, calyce subduplo longiore, squamis fimbr corollæ

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Cuscuta corymbosa, (Ruiz et Pavon sec. Choisy): caule subcapillaceo, ramoso; fasciculis florum subsessilibus, compositis; floribus singulis pedicellatis, pentameris; calycis semi-quinquefidi lobis obtusiusculis, tubo corollæ campanulato-turbinato, calycem subduplo excedente, laciniis limbi ovatis acutis, apice inflexis, erectis, demum patentibus subduplo longiore; staminibus limbo multo brevioribus, filamentis e basi lata subulatis, antheris oblongo-linearibus, squamis fimbriatis incurvis; stylis ovarium pyriforme (basi carnosum constrictum) æquantibus, crassis, faucem corollæ attingentibus; stigmatibus capitatis; capsula. . . .

Die Genfer Exemplare haben kleinere Blüthen, kürzere Blüthenstiele, eine etwas weitere Blumenröhre, breitere an der Basis etwas geöhrte Lappen der Blumenkrone, die sich auch an der geöffneten Blüthe noch decken, etwas kleinere, weniger tief zerschlitzte Schuppen und im allgemeinen eine dichtere, festere Textur der Blüthentheile. Die Kasseler Pflanze hat eine grössere, etwas mehr röhrige Blumenkrone mit nicht geöhrten, an der Basis nach dem Aufblühen sich nicht mehr deckenden Lappen, tiefer geschlitzte Schuppen, die aus der Blumenröhre hervorragen und im Allgemeinen membranösere, zartere Textur der Blüthentheile. Es sind dies Verschiedenheiten, denen kein specifisches Gewicht beigelegt werden kann, wie ich mich häufig an unseren nordamerikanischen Arten im Freien überzeugt habe. Die Kasseler Exemplare stellen die mastere Form dar, in einem nassen Jahre erwachsen! — Charakteristisch ist ausser der nicht aufspringenden Kapsel [555] (H. Mohl) und den kopfförmigen Narben, welche zwei Charactere sie mit allen amerikanischen Arten, die ich kenne, gemein hat, ganz vorzüglich: Die verkehrt-conische Gestalt der Blumenröhre; die eingeschlagenen spitzen Zipfel des Saums der Blume; die dicken pfriemenförmigen Filamente; die fast linienförmigen Antheren; die dicken kurzen Griffel und zumal die birnenförmige, fast keulenförmige Gestalt des Ovariums, dessen oberer Theil die Höhlen für die Ovula enthält, während der untere, eingeschnürte dicht ist. Es ist wahrscheinlich, dass die verdorrte Blumenkrone die Kapsel haubenförmig bedeckt, vielleicht auch sie ganz umgiebt. Untersuchung der *reifen* Kapsel und Durchschnitte des *frischen* Ovariums wären zu wünschen.

Aus Choisy's Monographie wird man jetzt wohl auch in Deutschland den südamerikanischen Ursprung der *C. hassiaca* erkannt haben. Es wäre unrecht, wenn sich in Europa eine kopfnarbige *Cuscuta* fände, da die geographischen Grenzen der beiden Abtheilungen der Cuscuten so schön und bestimmt sind. Ganz Europa, ganz Afrika, Asien bis zum westlichen Indien, gehört den fadennarbigen Cuscuten; ganz Amerika, ganz Australien und die Grenzen des stillen Meeres, China und das östliche Indien den kopfnarbigen.

Die Abbildung der *C. corymbosa* in Ruiz und Pavon t. 105. f. 6. kann ich übrigens leider nicht vergleichen; es bleibt daher noch einer genaueren Vergleichung vorbehalten, ob Choisy's Bestimmung der aus Chili nach Europa gewanderten Art richtig ist.

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Carlsruhe, den 13. Juli 1844.

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IV. BEMERKUNGEN UEBER CUSCUTEN.

From the Botanische Zeitung, Vol. IV. No. 16, April 17, 1846. Communicated by Alexander Braun.

Da die Cuscuten, ungeachtet des vielseitigen Interesses, welches sie bieten, zu den verhältnissmässig noch wenig gekannten Pflanzen gehören, indem selbst über die in Deutschland vorkommenden Arten die Akten noch lange nicht geschlossen sind, so scheint es mir nicht unzweckmässig, einige Bemerkungen über diese Gewächse zur Oeffentlichkeit zu bringen, welche mir mein Freund Engelmann in St. Louis in seinem letzten Briefe mitgetheilt hat. Ich werde denselben später einige eigene Beobachtungen anhängen, durch welche ich zur Naturgeschichte der Arten der deutschen Flora einige Beiträge zu liefern hoffe.

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dass die im südlichen Tyrol auf *Colutea* wachsende Art wirklich diese ist).

II. Cuscutæ stigmatibus capitatis, capsulis indehiscentibus (baccatis):

A. *Gerontogeæ:* (Die Mehrzahl derselben ist noch nicht hinreichend untersucht, um unter die amerikanischen Arten am rechten Orte eingereiht zu werden; hierher z. B.). 11. *C. ciliaris*, Kotschy. 12. *C. sulcata*, Roxb.

B. *Americanæ:*

a. Chlorocarpæ s. depressæ, ovario sine stylopodio, globoso-depresso, capsula membranacea, e flavo virescente:

α. Corolla capsulam maturam calyptræ instar obtegente:

* Stylis ovarium æquantibus: * 13. *C. Cephalanthi* (s. *tenuiflora*), E.

** Stylis ovario longioribus: 14. *C. Americana*, L. * 15. *C. cuspidata*, E.

β. Corolla ad basin capsulæ persistente:

* Stylis ovarium æquantibus: * 16. *C. pentagona*, E. * 17. *C. Polygonorum* (s. *chlorocarpa*), E. * 18. *C. umbellata*, Torr. (aus dem Felsengebirg, ob identisch mit der von Humboldt so benannten aus Neuspanien, ist noch zweifelhaft). * 19. *C. verrucosa*, E.


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NATÜRLICHE ANORDNUNG DER ARTEN DER GATTUNG *CUSCUTA* NACH G. ENGELMANN (JULI, 1845).

I. Cuscutæ stigmatibus elongatis, capsulis circumscissis :

A. Ovario conico, stylis coalitis :

a. Stylis omnino coalitis : 1. *C. monogyna*, Vahl. 2. *C. astyla*, E.

b. Stylis basi coalitis : 3. *C. macrantha*, Don. 4. *C. pedicellata*, Ledeb.

B. Ovario globoso, stylis a basi distinctis :

a. Ovario majore, stigmatibus cum stylis brevioribus ovarium æquantibus vel eo brevioribus : 5. *C. Epilinum*, Weihe. 6. *C. Europæa*, Auct. (*major*, C. Bauh., Chois.). 7. *C. Arabica*, Fresen. — ANMERK. In diese Abtheilung gehören noch mehrere Formen aus dem südlichen Europa und von den canarischen Inseln, deren specifische Charaktere noch [274] nicht hinreichend ausgemittelt sind.

b. Ovario minore, stigmatibus cum stylis æquantibus ovario multo longioribus : 8. *C. Epithymum*, Sm. (*minor*, C. Bauh., Chois.). 9. *C. cupulata*, E. 10. *C. planiflora*, Tenore (vorausgesetzt, dass die im südlichen Tyrol auf *Colutea* wachsende Art wirklich diese ist).

II. Cuscutæ stigmatibus capitatis, capsulis indehiscentibus (baccatis):

A. *Gerontogeæ :* (Die Mehrzahl derselben ist noch nicht hinreichend untersucht, um unter die amerikanischen Arten am rechten Orte eingereiht zu werden ; hierher z. B.). 11. *C. ciliaris*, Kotschy. 12. *C. sulcata*, Roxb.

B. *Americanæ :*

a. Chlorocarpæ s. depressæ, ovario sine stylopodio, globoso-depresso, capsula membranacea, e flavo virescente :

α. Corolla capsulam maturam calyptræ instar obtegente :

* Stylis ovarium æquantibus : * 13. *C. Cephalanthi* (s. *tenuiflora*), E.

** Stylis ovario longioribus : 14. *C. Americana*, L. * 15. *C. cuspidata*, E.

β. Corolla ad basin capsulæ persistente :

* Stylis ovarium æquantibus : * 16. *C. pentagona*, E. * 17. *C. Polygonorum* (s. *chlorocarpa*), E. * 18. *C. umbellata*, Torr. (aus dem Felsengebirg, ob identisch mit der von Humboldt so benannten aus Neuspanien, ist noch zweifelhaft). * 19. *C. verrucosa*, E.

** Stylis ovario multo longioribus : * 20. *C. Californica*, Chois.

b. Phæocarpæ s. umbonatæ, ovario stylopodio coronato, plus minusve umbonato vel rostrato, [275] capsula brunnea, firmiore :

α. Corolla membranacea, marginibus integris :

* Calyce gamosepalo, bracteis paucis remotis suffulto : * 21. *C. vulgivaga*, E. * 22. *C. Saururi*, E. * 23. *C. rostrata*, Shuttlew. 24. *C. Bonariensis*, Hort. 25. *C. Chilensis*, Bot. Reg. 26. *C. suaveolens*, Ser. (*hassiaca*, Pf.).

** Calyce 5-sepalo, bracteis sepaloideis, pluribus suffulto : * 27. *C. glomerata*, Chois. * 28. *C. compacta*, Juss. * 29. *C. adpressa*, E.

β. Corolla carnosa, margine crenulata. * 30. *C. Coryli* (s. *crenulata*), E. * 31. *C. neuropetala*, E. * 32. *C. hispidula*, E.

Die vorstehende Uebersicht enthält blos diejenigen Arten, welche von Engelmann selbst untersucht worden ; alle ihm noch nicht durch eigene Untersuchung oder nur aus unvollständigen Exemplaren bekannten sind nicht aufgeführt. Welchen Zuwachs an genau unterschiedenen Cuscuten Nordamerika durch Engelmann's Bemühungen in den letzten Jahren erhalten hat, ergiebt sich aus der Vergleichung von Engelmann's "Monographie der nordamerikanischen Cuscuten," in *Sillimann's Am. Journal*, Vol. XLIII. (1842), p. 333, et s. mit den in obiger Aufzählung vorkommenden (durch ein Sternchen bezeichneten) in Nordamerika einheimischen Arten. In der erwähnten Monographie sind mit Einschluss von *Lepidanche*, welche Gattung Engelmann jetzt wieder mit *Cuscuta* vereinigt hat, 8 Arten beschrieben, während die hier gegebene Uebersicht deren 16 enthält. Von südamerikanischen Cuscuten, die an Zahl die nordamerikanischen wahrscheinlich

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noch weit übertreffen, konnten wegen mangelhaften Materials nur wenige aufgeführt werden. Alle bisher bekannt gewordenen amerikanischen Cuscuten gehören in die Abtheilung derer mit kopfförmigen Narben; nach Choisy würde von dieser Regel *C. micrantha*, Chois. aus Chili, welche in Choisy's Monographie und De Candolle's Prodromus in der Abtheilung der Cuscuten mit verlängerten, fadenförmigen oder keulenförmigen Narben vorkommt, eine Ausnahme machen, allein Choisy's eigene Abbildung zeigt kopfförmige Narben. Auch die Cuscuten Australiens haben alle kopfförmige Narben. Uebrigens sind einige der europäischen Cuscuten mit verlängerten [276] Narben in Amerika eingewandert, so namentlich *C. Epilinum*.

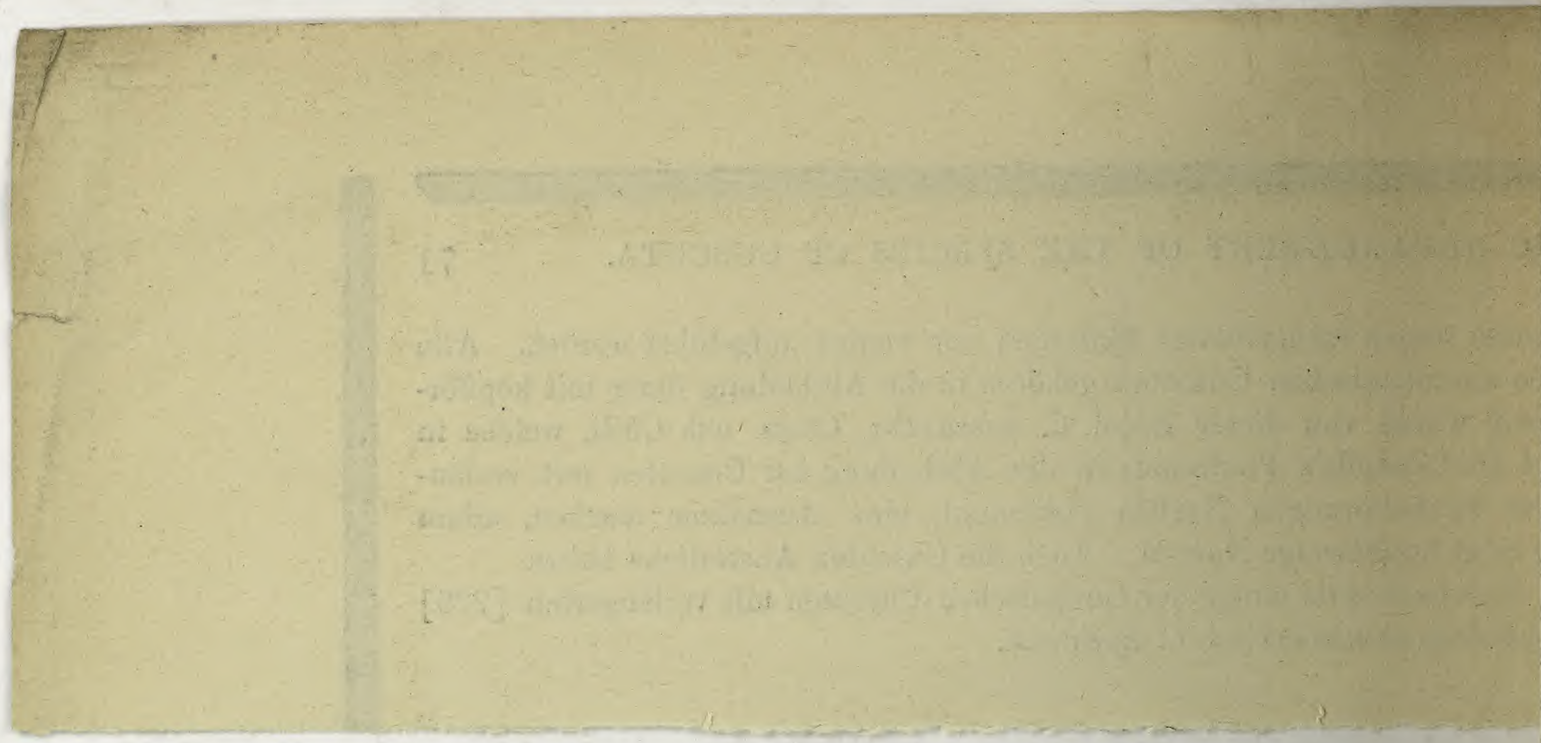
This law of expediency, however, can have no scientific value, and can certainly not be pleaded in regard to such a natural, easily recognized, and not too numerous genus, as *Cuscuta* is.

The subdivisions proposed are based, as has been stated, on the shape of the styles and stigmata, and on the capsule.

The *styles*, typically always two, usually are distinct; or they are united in their whole length, or nearly so. They are of equal thickness throughout, or are thicker at base (subulate), or thickened towards the top (club-shaped); they are of equal length in one group, and unequal in another.

The *stigmata* are cylindric, elongated, and of the same thickness as the styles, or thinner; or they are oblong, or oblong-elongated, and thicker than the styles; or they are subulate from a thick base; or we find them capitate (or, as they are often, though wrongly, called, globose), hemispherical, or somewhat flattened on the upper, and flattened or usually impressed at the lower surface at the insertion of the style. In a single species, the stigmatic surface of the dilated top of the style is lobed, and in the centre somewhat depressed.

The *capsule* is either circumscissile, opening transversely by a regular joint, with [454 (4)] thickened edges; or it bursts transversely with an irregular, jagged margin; or it remains



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MENT OF THE SPECIES OF THE GENUS CUS
N OLD SPECIES AND DESCRIPTIONS OF N

OF THE ACADEMY OF SCIENCE OF ST. LOUIS, VOL. I. No. 3, I

to the natural order of *Convolvulaceæ*, to which, ind
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and either falls out of the persistent calyx, or it fi

V. SYSTEMATIC ARRANGEMENT OF THE SPECIES OF THE GENUS CUSCUTA, WITH CRITICAL REMARKS ON OLD SPECIES AND DESCRIPTIONS OF NEW ONES.[1]

From the Transactions of the Academy of Science of St. Louis, Vol. I. No. 3, 1859.

The genus Cuscuta belongs to the natural order of *Convolvulaceæ*, to which, indeed, it has been attached by almost every botanist, and from which it cannot be separated, though the embryo is very distinct, being rather a minute plant than an embryo in the usual form, the tip forming a plumula, often provided with alternate scales, and without cotyledons proper. Nor ought such a natural group of plants to be split into a number of genera on subordinate characters, as has lately been proposed, and in some instances, too, upon erroneous observations.

The characters which furnish good grounds for a subdivision of the genus are found in the shape of the styles and stigmata and in the fruit. These same characters, it must be admitted, have been used in separating the old *Convolvuli* into numerous genera, and even tribes; so that analogy would justify or even require a similar division of *Cuscuta;* but even Choisy, the author of many of these new convolvulaceous genera, in his Monograph and in De Candolle's Prodromus, admits the propriety of keeping *Cuscuta* united. Splitting *Convolvulus* into numerous genera may be excused, or perhaps justified by the necessity of separating the large crowd of species into a number of groups. This law of expediency, however, can have no scientific value, and can certainly not be pleaded in regard to such a natural, easily recognized, and not too numerous genus, as *Cuscuta* is.

The subdivisions proposed are based, as has been stated, on the shape of the styles and stigmata, and on the capsule.

The *styles*, typically always two, usually are distinct; or they are united in their whole length, or nearly so. They are of equal thickness throughout, or are thicker at base (subulate), or thickened towards the top (club-shaped); they are of equal length in one group, and unequal in another.

The *stigmata* are cylindric, elongated, and of the same thickness as the styles, or thinner; or they are oblong, or oblong-elongated, and thicker than the styles; or they are subulate from a thick base; or we find them capitate (or, as they are often, though wrongly, called, globose), hemispherical, or somewhat flattened on the upper, and flattened or usually impressed at the lower surface at the insertion of the style. In a single species, the stigmatic surface of the dilated top of the style is lobed, and in the centre somewhat depressed.

The *capsule* is either circumscissile, opening transversely by a regular joint, with [454 (4)] thickened edges; or it bursts transversely with an irregular, jagged margin; or it remains closed (it is baccate, as it is termed), and either falls out of the persistent calyx, or it finally falls off with the calyx.

[1] See also Latin translation by Ascherson, with preface by A. Braun, published under title "Generis Cuscutæ species secundum ordinem systematicum dispositæ adjectis in prius jam notas observationibus criticis nec non novarum descriptionibus, auctore Georgio Engelmann, M.D." Berlin, 1860; pp. 8 + 87. — Eds.

Mo. Bot. Garden
1904

142, fig. 14) are taken from unripe seeds.

... as the one figured by Webb, Phyt. Can. III. pl.

Another character, which I ...

SYSTEMATIC ARRANGEMEN

...s of the ripe and dry capsule
...nsverse to the dissepiment,
...y, which compose the capsule.
...dissepiment which lies next to
...t adheres to the top, while the
...ins attached to the base of the
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...nnel-shaped intrastylar aper
...ess to the seeds, as has been
...enus *Cuscuta* (*Grammica*).
...ate with the cells of the ca
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...e portion of the dissepimen
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...e transverse to the dissepim
...nd *Callianche*, where the st
...ower the entire dissepimen
...ne stylar portion adheres to

...the first, in his "Études," to
...e tilium in particular. W
...e exterior convex and two
...ell of the same cell; the to
...the placenta (which itself
...hooked, or rostrate, as Des
...ecal towards the dissepime
...d a smooth and roundish
...a broader linear groove, so
...e interior angle of the see
...ell), or it has an interme
...distinct; in others they
...n intermediate, and varia
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...pressed hard, have led
...on such unripe seeds.

...been supposed to offer
...few circumvolutions
...from unripe seeds.
...e which I at one time
...is gamosepalous, but
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...where only one genus
...bers of *Cuscuta* are

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Between both styles of the ripe and dry capsule an opening is observed — the intrastylar aperture — parallel with or transverse to the dissepiment, more or less rhombic, formed by an incomplete separation of both carpels, which compose the capsule. This separation takes place in that triangular and thickest part of the dissepiment which lies next to and below the styles, and which, in the species with circumscissile fruit, adheres to the top, while the greater and thinner obcordate or bilobed part of the dissepiment remains attached to the base of the capsule in the bottom of the calyx.

In most instances the stylar portions of the dissepiment, as I will call this part, remain united at base, separating the funnel-shaped intrastylar aperture from the interior cavity of the capsule, and therefore cannot give egress to the seeds, as has been erroneously stated. This is, I believe, the case with most or all American *Cuscutæ* (*Grammica*). In *Eucuscuta* and *Epistigma* the intrastylar aperture does communicate with the cells of the capsule, but the opening is far too small to let the seeds out; nor would this be necessary, as in all of them the capsule is circumscissile. In some few species I find each stylar portion of the dissepiment divided into two halves; in *C. pedicellata* these halves are widely distant from one another and adhere to the opposite halves, so as to form an opening into the capsule transverse to the dissepiment.

In *Monogynella* and *Callianche*, where the styles are united, there is, of course, no intrastylar opening, and in the former the entire dissepiment remains in the bottom of the capsule; in the latter, a small triangular stylar portion adheres to the top of the capsule, but, of course, without any opening.

Des Moulins was the first, in his "Études," to draw attention to the shape of the seed in general and the direction of the hilum in particular. Where all the four seeds are well developed, they are triangular, with a larger exterior convex and two smaller flat surfaces, the latter facing the dissepiment and the other seed of the same cell; the top of the seed is rounded or acutish; the base, with which it is attached to the placenta (which itself is dilated into a disc, often cup-shaped), is obliquely truncate or somewhat hooked, or rostrate, as Des Moulins terms it. Both flat faces of the seed are equal, or the one directed towards the dissepiment is larger than the other. At the truncate base of the seed, in the centre of a smooth and roundish umbilicus, is the hilum, forming a longer or shorter, narrower or broader linear groove, sometimes reduced almost to a point; it runs [455 (5)] in the direction of the interior angle of the seed (*longitudinal*, DesM.), or at right angles with it (*transverse*, DesM.), or it has an intermediate, oblique direction. In some sections I find these characters sufficiently distinct; in others they seem to be less reliable; in the American *Cuscutæ* I have often found them intermediate, and variable, often in seeds from the same capsule. Wherever only one or two seeds in a capsule come to maturity their shape becomes less distinct, and offers no good characters. It is scarcely necessary to add that only ripe seeds ought to be examined; unripe ones, especially when pressed hard, have led to the strangest mistakes; winged or margined seeds described by authors are such unripe seeds. Nearly ripe seeds are smoother and larger, when soaked, than ripe ones.

The embryo has been supposed to offer good characters; but I have reason to believe that those embryos with one or few circumvolutions (such as the one figured by Webb, Phyt. Can. III. pl. 142, fig. 14) are taken from unripe seeds.

Another character which I at one time relied on for generic distinction of *Cuscutæ* is found in the calyx. Usually it is gamosepalous, but in some American species it is formed of entirely distinct and imbricate sepals, not different from the surrounding bracts, — a character which prevails in *Convolvulaceæ* proper, where only one genus (*Wilsonia*) is gamosepalous.

The specific characters of *Cuscutæ* are found in the thickness of the stem, but principally in the inflorescence and in the different organs of the flower and fruit.

The inflorescence together with the presence or absence of bracts within it offers good characters; less so, the presence or proportion of pedicels.

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The shape and proportion of calyx and corolla and of their parts (tube and lobes) furnish important but not unchangeable characters. Their texture must also be studied, and often gives an important clue to the distinction of species.

It is unnecessary to repeat what has been said by former monographers about these points, but it may not be useless to indicate a few facts not so clearly stated by them.

The tube of the calyx, generally more or less campanulate or hemispherical, is angular in some species, the angles corresponding to the commissure, or to the midrib of the sepals. Its lobes are more or less deeply divided, and are often auricled at base, and overlapping; these characters, however, are not very constant and reliable, as they not rarely depend on the rich nourishment and consequent vigorous growth of the parasite. The texture of the calyx is homogeneous in some species, and either fleshy or membranaceous (often very thin, shining, or semi- [456 (6)] transparent, when dry), with a small or large reticulated cellular tissue; or it exhibits, especially along the middle and towards the base an aggregation of warts or tubercles; these, also, are not constant in all the forms of the species. In other species, the tissue shows roundish or elongated pellucid dots or cells (glands, as they are usually called), very distinct in dried and then soaked specimens.

The tube of the corolla is cylindric or campanulate, or rather hemispherical or quite shallow, but never urceolate or ventricose during the flowering period; the swelling of the impregnated ovary, however, often gives it that shape. The laciniæ[1] of the corolla are of different shape, and direction, and proportion, and also sometimes auriculate and imbricate at base; their points are occasionally incurved, or their margins revolute, or involute; their margin, usually entire, is sometimes crenulate. The texture of the corolla is similar to that of the calyx, but never, I believe, verrucose, though often glandular. Its cellular structure will yet, I suspect, offer good characters for some species, the cells being of very different size and shape in different species. The corolla, and sometimes the calyx, is occasionally covered with small papillæ, which probably represent hairs, giving it a mealy appearance. This character, apparently so striking, is, however, of no more specific value than the pubescence in other plants, as I find papillose varieties of a number of European (*C. planiflora, C. Babylonica*) and American (*C. decora, etc.*) species, of course with intermediate forms. Of a single species (*C. capitata*), I know only the papillose form.

The calyx is always persistent; the corolla is deciduous only in the Indian *C. reflexa*; in all the other species it remains adhering to the capsule, either to its base, or, hood-like, to its top, or it completely envelops it, but it is not properly persistent; it is distended from the swelling of the capsule, but does not seem to grow. The position of the dead corolla is usually constant.

The stamens are mostly inserted in the very throat of the corolla, alternating with the laciniæ, but often exteriorly covered by their overlapping bases. In *Callianche* and *Monogynella* their point of insertion is usually below the throat, and the filaments are very short. The filaments in the other *Cuscutæ* are more or less flattened, linear, or subulate; of different lengths, but usually much shorter than the laciniæ; they are rarely absent. The anthers are orbicular, ovate, oblong or linear, cordate or sagittate, blunt, emarginate, or apiculate, large or small; but their [457 (7)] shape or size do not afford good and constant characters in this genus.

The most peculiar organs of the flower are the epistamineal scales, which are found in most of the species. The simplest form of that organ (in *C. inflexa, C. chlorocarpa, etc.*) exhibits a few teeth or lobes laterally adhering to the lower (attached) part of the filament. These lobes in other species expand into membranes, forming two lateral wings to the filament, crenulate or fringed at the tip and outside; then these wings partly unite at their upper end, thus forming a single bifid scale; finally they unite entirely, forming an oblong, ovate, spatulate or truncate, more

[1] I shall use the word *lacinice* for the divisions of the corolla, and *lobes* for those of the calyx.

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or less crenate or fimbriate scale. Towards the base the scales are always "adnate in the middle," or, properly speaking, attached to both sides of the adnate filament. Their bases usually connect with one another, forming inverted arches.

In the following species these scales are wanting: *C. grandiflora* and *C. prismatica* of South America, *C. hyalina* of Asia, *C. Californica*, and *C. Sandwichiana*. In *C. Californica* the inverted arch alone is present, entire or fringed; in the others I find no trace of scales at all.

These scales are evidently lateral dilatations of the lower (attached) part of the filaments, perhaps of the character of stipules, as Professor A. Braun suggests; or they are a sort of stamineal crown, attached at base to the corolla, but not a duplication of the same.

The presence, form, and size of the scales furnish some of the best characters in this genus, but they are not entirely reliable; and while in some species they are very constant, in others they are found to vary considerably. It is doubtful whether a really scaleless form of *C. Europæa* exists; *C. Californica*, usually without scales, seems to occur also in a variety with scales.

The ovary and pistils are more reliable for the determination of species, just as they furnish the most important characters for the distinction of the sections. The walls of the ovary are of equal thickness throughout, or they are thickened towards the base of the style (furnished with a *stylopodium*, as I formerly designated this form). The ovary is smaller than the tube of the corolla, or it fills its whole cavity, or even protrudes from it. The styles are subulate or terete, thick or capillary, and very constant in these differences. Their length, however, is variable; and this character, so much relied on by Choisy in the subdivisions of this genus in his Monography and in DC. Prodromus, is of secondary importance, as the same species sometimes occurs with short or with long styles, and as the styles, included at first, often become exsert [458 (8)] with age. The direction of the styles in the flower and on the fruit furnishes a tolerably good character.

The position of the dead corolla on the capsule has already been mentioned as a pretty reliable specific character. The shape and even the texture of the capsule also ought to be noted, though in several species (*C. Europæa*, for example) its form is quite variable.

The number of seeds which ripen in each capsule furnishes no distinction, though the species with very crowded flowers, and some others with loose flowers also, often develop only one or few seeds. The shape and surface of the seed ought to be studied more, and will yet, it is believed, help to distinguish some species.

As almost all the characters enumerated above are subject to more or less variation, it is necessary to base the diagnosis of a species on a combination of a number of characters; but as the value of these characters is necessarily differently estimated by different botanists, some will consider as well-marked species what others will look upon as mere varieties.

The different species often seem to have a predilection for certain plants, or families of plants, for their sustenance; and I have myself at times thought I discovered an influence of the mother plant (or, better, nursing plant, nurse) on the form and development of the parasite. But I have become fully convinced that this influence is very limited, and probably goes not even farther than the influence of different kinds of soil and manure would go with any other plant. If some species seem very constantly to prefer certain plants to others (*C. Europæa, Urtica dioica; C. Epithymum, Calluna vulgaris* or *Genista sagittalis; C. chlorocarpa, Polygonum; C. Gronovii, Cephalanthus; C. lupuliformis, Salix;* and, the most marked example, *C. Epilinum*, the flax fields), it is probably because the kind of soil, the humidity or dryness, the shade or sun, and all the circumstances which suit the nurse, also agree best with the parasite. On the whole, succulent herbaceous dicotyledonous plants suit them best as nurses; some few species prefer low shrubs or semi-shrubs; and most of the *Monogynellæ* and a few others affect larger shrubs and trees, of course penetrating only the tender bark of the smaller limbs.

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Cuscutæ are found also on acrid or poisonous plants. I have seen them on *Ranunculaceæ*, on *Euphorbiæ*, on *Cicuta* and other *Umbelliferæ*, on *Rhus Toxicodendron*, and others. I have seen them also, though sparingly and not very thrifty, on *Monocotyledoneæ*, — such as *Liliaceæ*, *Gramineæ*, and others, — and even on the siliceous epidermis of *Equisetum*. The fact is that, when once attached to a nursing stem, they throw out their branches and coil around any plant in the neighborhood, and strike their suckers into the tissue, and grow on anything that can furnish [459 (9)] them nourishment, even on their own branches and flowers. This is even the case with the most exclusive species, *C. Epilinum*, which attaches itself to all the weeds growing in flax fields, and may be cultivated on *Vicia*, *Impatiens*, and many other plants. Rich nourishment on succulent plants expands the organs, enlarges the flowers, increases the whole plant, and thus gives rise to varieties which at times have been distinguished as species. *C. Epithymum* in clover fields becomes what has been called *C. Trifolii ; C. Europæa* on vetches, *C. Viciæ ; C. Gronovii* in shaded miry soil, on *Saururus*, *C. Saururi ;* the overgrown form of *C. Africana* is *C. Capensis*, etc.

The *haustoria* (suckers) of *Cuscuta* deeply penetrate into the tissue of the nurse, and they, with parts of the stem imbedded in this tissue, are able to reproduce the plant after all external vestiges of the stem have been rubbed off. This the gardeners often have occasion to deplore in regard to a variety of *C. Epithymum* which has become a pest to some greenhouses in Europe. I have observed the same fact in different species which I have had under cultivation, especially in *C. inflexa*.

The species of *Cuscuta* naturally arrange themselves in three large groups, distinguished by their styles and stigmata.

1. Those with *two equal styles and elongated stigmata*. They are natives of the Old World exclusively, and have rarely and only temporarily been introduced with cultivated plants into America. (*C. Epilinum* with flax into some of our Eastern States, and *C. Europæa* with vetches in Hayti.) They may be termed *Cuscuta* proper. (*Cuscuta* and *Epilinella*, Pfeiffer, Bot. Zeitg. III. 673 ; *Cuscuta*, *Epilinella*, and *Succuta*, DesM. Et. pp. 38–41.)

2. Those with *two unequal styles, and abbreviated, usually capitate, stigmata*. They abound in America and Oceanica, and in the southern and eastern parts of Asia ; a few species even penetrate into western Asia and southern Europe, and a single species is found in southern Africa. Cultivation has temporarily introduced one species into Europe (*C. racemosa* from Chili, under the name of *C. suaveolens*). This group may be comprised under the name of *Grammica*, — a genus established by Loureiro in his Flora Cochinchinensis, I. 212, on a species belonging here. (*Engelmannia*, Pfeiffer, Bot. Zeitg. III. 673, not Torrey and Gray, nor Klotzsch ; *Pfeifferia*, Buchinger Ann. Sc. Nat. IX. 88, not Salm-Dyck ; *Buchingera*, F. Schultz in Jahrb. Pharm. 1847 ; *Cassutha*, DesM. Et. 40 ; *Grammica*, DesM. Bull. Soc. Bot. France, I. 295 ; *Cuscutina*, Pfeiff. Bot. Zeit. 1846, p. 461.)

3. Those with *styles united entirely or partly, and with capitate, ovate, or conic stigmata*. The species of this group, all distinguished by their large size and thick stems, [460 (10)] principally inhabit Asia ; two extend into southern and eastern Europe ; and two others are found in South Africa and southern North America. This group is Des Moulin's (Et. 39) *Monogynella*, with a little altered character.

The modifications in the form of the stigma and the dehiscence of the capsule furnish the basis for a further subdivision of the three principal groups. I will here only say that in *Cuscuta* proper the capsule is almost always circumscissile ; in *Grammica* it is often so, but more commonly it remains closed ; in *Monogynella* it is constantly circumscissile.

The dead corolla covers the whole or the top of the capsule always, with a single exception (*C. Africana*), in the first ; it is found on the top, or at the base of the capsule, in the second ; and, if not deciduous, always on its top in the third group.

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SYSTEMATIC ARR

following sections are proposed:—

A. Cus

CTA. Styles nearly as long or longer and as thick or
OTOMA. Subulate stigmata nearly sessile; capsule op
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ROMATICA. Stigmata capitate; capsule more
OCEPHALOMICA. Stigmata capitate; capsule
LOBOSTIGMA. Top of clavate styles lobed at t

MONOGYNELLA. Stigmata capitate or ov
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The following sections are proposed: —

A. *Cuscuta Group.*

1. EUCUSCUTA. Styles nearly as long or longer and as thick or thicker than the filiform stigmata; capsule regularly circumscissile.
2. EPISTIGMA. Subulate stigmata nearly sessile; capsule opening transversely without a regular jointed separation.
3. CLISTOCOCCA. Subulate styles longer than the short subulate stigmata; capsule baccate.
4. PACHYSTIGMA. Cylindric or oblong stigmata thicker than the filiform styles; capsule bursting transversely.

B. *Grammica Group.*

5. EUGRAMMICA. Stigmata capitate; capsule more or less irregularly circumscissile.
6. CLISTOGRAMMICA. Stigmata capitate; capsule baccate.
7. LOBOSTIGMA. Top of clavate styles lobed at the upper stigmatose surface.

C. *Monogyna Group.*

8. MONOGYNELLA. Stigmata capitate or ovate, united or distinct.
9. CALLIANCHE. Stigmata conic, or almost subulate; corolla large and deciduous.

SECT. 1. EUCUSCUTA.

Styles filiform, terminating in filiform stigmata of the same length or shorter, rarely longer, and of the same thickness as the styles, or thinner towards the end. Capsule regularly circumscissile by a joint, the line of separation being thickened. Usually all four seeds ripen; they are triangular, with an obliquely truncate base, the hilum forming a narrow perpendicular line.

The flowers are mostly sessile and densely clustered, forming globose heads in the axils of single [461 (11)] bracts without bracts in the inflorescence. The central flowers open first; the exterior ones are occasionally abortive. *C. Epithymum* has sometimes short pedicels, and *C. Babylonica* is always pedicelled. The corolla always remains on top or around the capsule, never at its base. Epistamineal scales are always present, though sometimes very thin and small, and easily overlooked.

The species of this group inhabit Europe, western and central Asia, and northern Africa to the Canary Islands.

§ 1. Styles longer than ovary.

1. C. BABYLONICA, Aucher! mss.; Choisy! Cusc. 174, t. 1, f. 1; DC. Prod. IX. 453. *C. pedunculatis*, Kotschy! in sched. — Well characterized by its pedicelled flowers, truncate calyx and almost entire scales; approaching by its inflorescence to those other Asiatic species comprised in the section *Epistigma*. — Bagdad, Aucher-Eloy! 1420 and 3183; on the Tigris, Noë! in Kurdistan, Kotschy! 388, a.

Var. ELEGANS. *C. elegans*, Boiss. & Balansa! Diag. Or. II. 3, 129, from the alpine regions of the Taurus, Balansa! 708; scarcely distinct from *C. Babylonica* except by the papillose prettily rose-colored flowers, and by the scales being a little more dentate and somewhat incurved.

2. C. EPITHYMUM, Murray in L. Syst. ed. 13. *C. Europæa*, β, L. Sp. 180. *C. minor*, Bauh. Pin. 219; DC. Fl. fr. III. 644; DC. Prod. IX. 453. *C. filiformis*, β, Lam. Fl. fr. II. 307. — To this well known and common European species some authors have assigned all the different forms I am going to enumerate below, while others have separated several of them as distinct species; others, again, have united with it a number of other forms which I must consider distinct, especially such as I class with *C. planiflora;* some have even mixed up with it the very distinct *C. Europæa.*

It is certainly difficult to make precise the limits of *C. Epithymum* and *C. planiflora*, and some forms which I class under var. *Kotschyi* of the former, and others which fall under var. *approximata* of the latter, apparently are more closely allied than the extremes of either species among themselves; while the common *C. Epithymum*, especially the form known as *C. Trifolii*, is as distinct as can be from Tenore's original *C. planiflora*. I arrange the different forms in the following order: —

Var. *a.* VULGARIS, the common form of central Europe extending west to Great Britain, north to Scandinavia, south to northern Spain (Bourgeau! 655), northern Italy (*C. acutiflora*, Rota!), and also [462 (12)] Naples, to the Crimea, and reaching eastwardly far into Asia (Caucasus, Hohenacker! 409 and 1939, Altai, Ledebour! "Orient" Herb. Tournefort!). It varies considerably, especially in the size and proportion of the calyx and its lobes, and transition forms, uniting it with the other varieties, are not rare. I have paid some attention to the proportion of the stigma and style, but find no permanent character in them; the style proper is longer or shorter than the stigmatic portion; and this part is cylindrical or subulate in specimens not otherwise distinguishable; the stigma is usually pale brown-red, or, when dry, dark red, rarely yellowish. — *C. Trifolii*, Babington! sometimes so fatal to whole clover fields in England, France, Switzerland, Germany, and Sweden, is a luxuriant form, overgrown at the expense of the succulent herb, which it destroys.

Var. β. MACRANTHERA. *C. macranthera*, Heldr. & Sart.! in sched.; Boiss.! Diag. Or. II. 3, 126. *C. Calliopes*, Heldr. & Sart.!; Boiss.! ibid, 128. — Large flowers on very short pedicels; calyx short, its ovate lobes scarcely covering half of the tube of the corolla; laciniæ ovate, acute or obtusish; anthers oval, large, often longer than the filaments;

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SYSTEMA

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C. Epithymum; even now he preserves in his own herbarium, under this name, forms of several other species, besides the very specimen described and figured by him as *C. planiflora*, easily recognized by the well-figured *Plantago lanceolata* on which it grows. But this is not the only, nor the principal, cause of the difficulties under which botanists have labored in regard to this plant. It is probably the most variable of all the species of this genus, and appears under a larger number of forms than any other. Well may botanists differ from the view that I take in regard to this species, but it has not been adopted lightly. With 150 to 200 specimens from Europe, Africa, and Asia, before me, I have found it impossible to separate, specifically, the different forms here brought together; and even the subspecies, enumerated below, cannot always be limited satisfactorily. On the other hand I find it difficult to keep this species, or complex of forms, as I am inclined to call it, separate from some allied species. Some varieties approach to *C. brevistyla*, others to *C. Palæstina*, and others again are difficult to distinguish from the alpine form of *C. Epithymum* (*Kotschyi*).

The long list of synonyms properly belongs to the different subspecies; for the species, as I take it, [465 (15)] no synonym, nor even a name, exists: the one adopted by me is the earliest one given to any one of the forms.

Synopsis of the forms of C. planiflora.

a. Lobes of the calyx more membranaceous than fleshy; laciniæ of the corolla turgid only at the points; styles much longer than ovary.

* Calyx cupulate, lobes usually broad and short, and, like the short laciniæ, cuspidate: Var. *approximata.*

** Calyx more deeply divided, its lobes and the laciniæ narrow, elongated, acute: Var. *Schiraziana.*

b. Lobes of the calyx thick and turgid; laciniæ turgid and often cucullate at tip; styles longer than ovary, usually shorter than or as long as capsule.

* Flowers larger; lobes of calyx united above the middle or almost to the point: Var. *Webbii.*

** Flowers usually smaller; sepals almost distinct.

† Flowers smooth: Var. *Tenorii.*

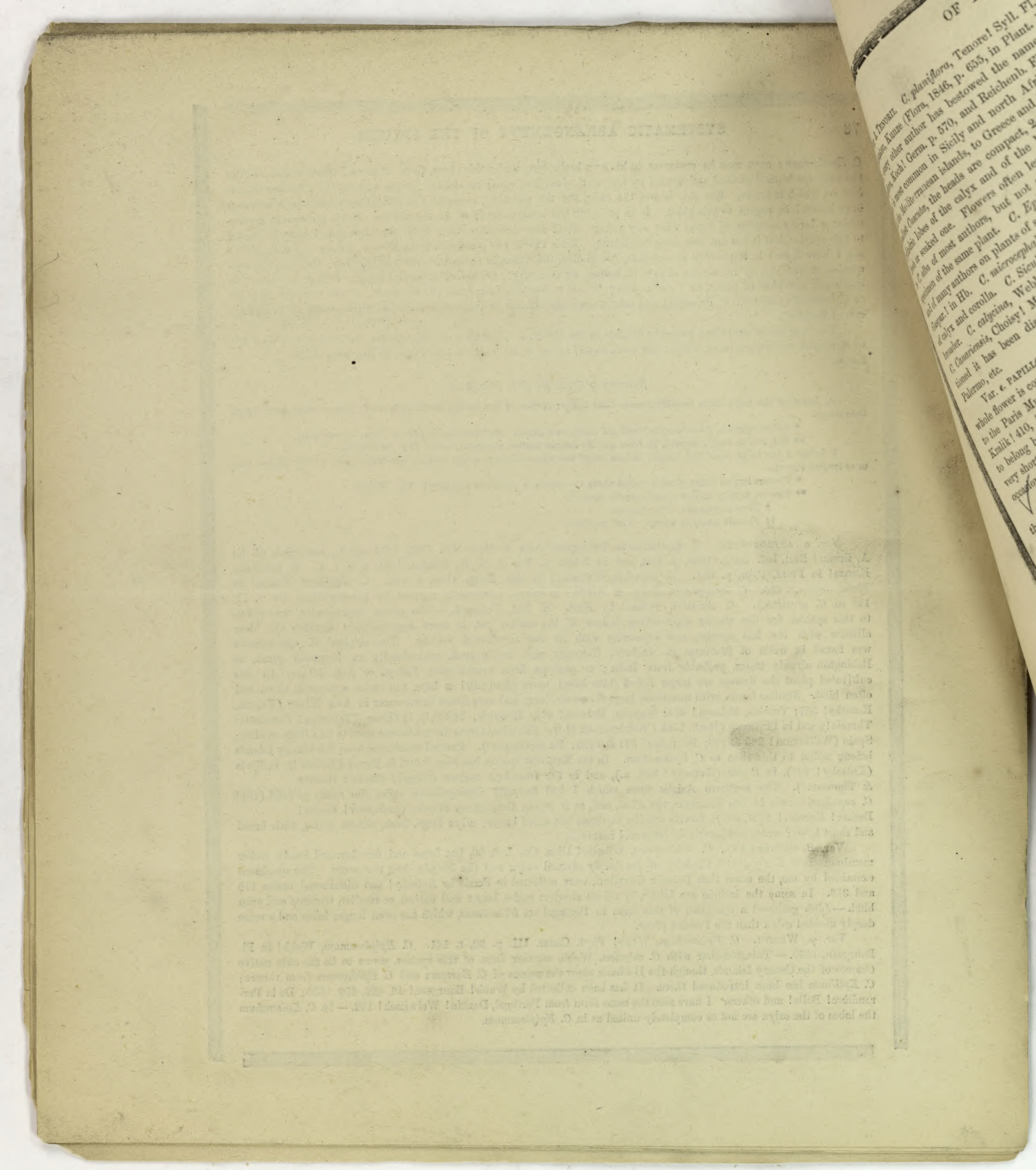
†† Flowers mealy or warty: Var. *papillosa.*

Var. *α.* APPROXIMATA. *C. approximata*, Babington! Ann. & Mag. Nat. Hist. 1844, pl. 4., and 1845, pl. 1.; A. Braun! Berl. bot. Zeitg. 1844, p. 542, and in Jahrb. d. Ver. f. N. K. Nassau, 1851, t. 1, f. 1. *C. urceolata*, Kunze! in Flora, 1846, p. 651. *C. cupulata*, Engelm.! in Bot. Zeitg. 1846, c. 276. *C. planiflora*, Kunze! in Flora, 1846, p. 655. *C. leucosphæra*, Boiss. & Heldr.! in sched. (afterwards referred by Boissier Diag. Or. 1. II. 127 to *C. urceolata*). *C. Asiatica*, Pallas! in Herb. H. Bot. Petropol. — The name, *approximata*, was given to this species for the closely approaching halves of the scales; yet, it more appropriately signifies the close alliance with the last species, and especially with its last mentioned variety. The original *C. approximata* was found in fields of *Medicago* in England, Germany and Switzerland, undoubtedly an imported plant, as Babington already states, probably from India; or perhaps from southeastern Europe or Asia Minor. In this cultivated plant the flowers are larger ($1\frac{3}{4}$–2 lines long), more attenuated at base, the scales appressed, short and often bifid. Similar forms, with numerous large flowers in large and very dense heads occur in Asia Minor (Taurus, Kotschy! 357; Tmolus, Balansa! 414; Smyrna, Balansa! 412; Bithynia, Thirke!), in Greece (Taygetus! Parnassus! Thracia!), and in Piedmont (Herb. Link! Reichenbach fil.!). The plants from the southwest seem to be a little smaller; Spain (Willkomm! 263 & 246; Bourgeau! 331 & 1299; Ph. Schimper!). Several specimens from the Canary Islands belong rather to this than to *C. Episonchum*. In the East this species has been found in Egypt (Fischer!), in Syria (Kotschy! 104), in Persia (Kotschy! 580, a.), and in the Himalaya regions (Hiigel! Stocks! Hooker & Thomson!). The northern Asiatic form, which I had formerly distinguished under the name of [466 (16)] *C. cupulata*, occurs in the Caucasus, the Altai, and, as it seems, throughout Siberia (Ledebour! Godet! Becker! Karelin! 1721, etc.); flowers smaller in dense but small heads; calyx large, loose, almost entire, with broad and short lobes; scales comparatively large and incurved.

Var. *β.* SCHIRAZIANA, *C. Schiraziana*, Boissier! Diag. Or. I. 9, 86, has loose and few-flowered heads, rather membranaceous flowers, with the lobes of the deeply divided calyx and the laciniæ long and acute. The specimens examined by me, the same that Boissier described, were collected in Persia by Kotschy! and distributed under 118 and 318. In some the laciniæ are larger, in others shorter; scales larger and entire; or smaller, truncate and even bifid. — Link gathered a specimen of this form in Portugal on *Ulex nanus*, which has even longer lobes and a more deeply divided calyx than the Persian plant.

Var. *γ.* WEBBII. *C. Episonchum*, Webb! Phyt. Canar. III. p. 36, t. 141. *C. Epiplocamum*, Webb! in Pl. Bourgeau, 1430. — This, together with *C. calycina*, Webb, another form of this species, seems to be the only native *Cuscuta* of the Canary Islands, though the Herbaria show the names of *C. Europæa* and *C. Epithymum* from thence; *C. Epilinum* has been introduced there. It has been collected by Webb! Bourgeau! 18, 426, 459, 1430; De la Perraudière! Bolle! and others. I have seen the same form from Portugal, Deakin! Welwitsch! 192. — In *C. Episonchum* the lobes of the calyx are not as completely united as in *C. Epiplocamum.*

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Var. δ. TENORII. *C. planiflora*, Tenore! Syll. Fl. Neap. p. 128 and Flor. Neap. III. p. 250, t. 220, f. 3. — If I am not mistaken, Kunze (Flora, 1846, p. 655, in Plant. Willk. nro. 303) was the only botanist who recognized Tenore's plant; every other author has bestowed the name on some other forms of our plant or on some other species. *C. planiflora*, Koch! Germ. p. 570, and Reichenb. Fl. Germ. Exsicc. nro. 2069, are forms of *C. Epithymum*. — Tenore's plant is most common in Sicily and north Africa, extending to the Canary Islands, to Spain, southern France, Italy and the Mediterranean islands, to Greece and Egypt, and undoubtedly also to Asia Minor and Syria. It is one of the smallest *Cuscutæ*, the heads are compact, 2–3 lines in diameter, white or rose-colored. The turgidity of the almost cylindric lobes of the calyx and of the laciniæ is very distinct even in the dried specimen, and very striking in the fresh or soaked one. Flowers often less than 1 line in length; grains very rough, 0.3–0.4 lines in diameter. — This is *C. alba* of most authors, but not of Presl. *Succuta*, DesM. Et. 41 is a genus founded on an immature specimen of the same plant. *C. Epithymum*, Gussone! Flor. Inarim. p. 212, Cosson! in Plant. Bourgeau [467 (17)] and of many authors on plants of southern Europe. *C. Europæa*, Bové! in Hb. Mauritan. 149. *C. bracteosa*, Gaspar.! in Hb. *C. microcephala*, d'Escayrac! in Hb. *C. Godronii*, DesM.! l. c. 60, is a form with more acute lobes of calyx and corolla. *C. Sicula*, Tineo (*fide* spec. in the Hb. Cesati) is the same plant with lobes of the calyx a little broader. *C. calycina*, Webb! Phyt. Canar. III. p. 37, t. 152, has a larger calyx including almost entirely the corolla. *C. Canariensis*, Choisy! Mss. is the same thing. — It occurs in many published collections; besides those already mentioned it has been distributed by Bourgeau! 491, 1298, 1430, a. etc.; Aucher-Eloy! 1418; Huet de Pavillon! Palermo, etc.

Var. ε. PAPILLOSA is a peculiar form of the last subspecies, which thus far seems to have escaped observers; the whole flower is covered with semi-transparent papillæ; otherwise, I find no difference in specimens sent from Algiers to the Paris Museum by Balansa! But often the lobes are elongated and acute; so in the specimens from Tunis, Kralik! 410, Algiers, Cosson! Segovia, Hb. Gussone! A specimen from Arabia, Botta! in Hb. Mus. Paris., seems also to belong here. *C. globulosa*, Boiss. & Reut. is very closely allied to this form, and distinguished principally by the very short styles, and the globose corolla, the lobes of which cover the capsule; this form of the corolla does, however, occasionally also occur in specimens, which cannot be separated from *C. planiflora*.

5. C. PALÆSTINA, Boissier! Diag. Or. I. 11, 86. — This pretty little species is closely allied to the last, to which the author himself subsequently referred it; but it seems to hold its rank with a number of other species of this genus, the limits of which are so difficult to ascertain. Tournefort (Cor. 45) already distinguished it under the name of *C. Cretica;* it is also *C. micrantha*, Tineo! in Gussone Fl. Sic. Syn. II. 887, not Choisy; and *C. capillaris*, Reichenb. Pl. Crit. V. 64. *C. globularis*, Bert. Fl. it. VII. 625, is the same plant. — It grows on small mostly shrubby plants, on arid hills in the Mediterranean region; in Sicily, Tineo! Morea, Bory! Attica, Heldreich! Creta, Sieber! Raulin! and other Grecian islands, Lefêvre! etc.; Palestine, Boissier! Gaillardot! Blanche! — Heads only about 2 lines in diameter, flowers ½–1 line long, usually 4-, but often only 3-parted; only the central or primitive flower of the heads is often 5-parted; calyx comparatively large, with broad and short carinate lobes; top of laciniæ cucullate; scales rather large, broadly spatulate, incurved; styles somewhat longer than ovary.

§ 2. Styles as long as or shorter than ovary.

6. C. BREVISTYLA, A. Braun! in Pl. Schimp., and in Richard Tent. Fl. Abyss. II. 79, is perhaps too [468 (18)] nearly allied to *C. planiflora*, from some forms of which it is scarcely distinguished but by the short styles, which, in fruit, become divaricate. In the original Abyssinian specimens the lobes of the corolla are expanded, in some others they are closed over the capsule. The scales are short, thin and truncate or sometimes bilobed. — It has been found in Abyssinia, Schimper! III. 1486; on the Sinai, Botta! in Persia, Kotschy! 580; Affghanistan, Griffith! 686; Thibet, Hooker and Thomson! *C. elegans*, Noë! in Herb. 518 (not Boissier), from the Tigris, is the same plant.

Var. ? GLOBULOSA. *C. globulosa*, Boissier & Reuter! in sched.; Boiss. in Diag. Or. II. 3, 126. *C. Balansæ*, Boiss. & Reut. in sched. — This very pretty form at first sight looks very distinct; but Boissier himself already suggests the propriety of uniting it with "*C. alba*" (*planiflora*), and indeed its papillose flowers greatly resemble the var. *papillosa* described above; on the other hand it approaches *C. capitata*, but more in external appearance than in essential characters; the pretty red tinge of its flowers is occasionally found in both of these, and may be in some connection with the development of the papillæ. — The corolla closes over the capsule, giving the flower as well as the whole head an obtuse appearance; the scales in the original specimen are bilobed, in the other truncate; styles very short. — Mountain regions of Asia Minor: on the Tmolus, Balansa! 413; on the Taurus, the same! 707.

7. C. EUROPÆA, L. Sp. 180, excl. var. β. This well-known and well-characterized species offers none of the difficulties of all the other European *Cuscutæ;* the obconic calyx with its thick and fleshy and usually elongated base and thin and obtuse lobes, the thin corolla with obtuse laciniæ, the small and very thin bifid or truncate appressed scales, the large ovary and comparatively large capsule with short divaricate styles and bearing the dead corolla only on top (not enveloped in it) readily distinguish it; nor does it vary nearly as much as the others do; the flowers, however, are as often 5- as 4-parted.

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This species has given cause to a good deal of discussion in regard to the presence or absence of scales; but though I have examined a number of specimens said to have no scales, among others the original var. *nefrens* of Sweden, I have never failed to discover that organ, though sometimes in a very defective state; I, therefore, cannot doubt that it is always present, but frequently so small and especially so very thin as to escape detection. In dry specimens, soaked or boiled, it adheres to the tube of the corolla so closely that it is scarcely possible to see or to separate it; but it is readily discovered and detached in the dry flower, if not too much mashed in pressing. The scales [469 (19)] are rarely rounded, oftener truncate, and toothed at the apex, most commonly bifid, and fimbriate or toothed, or consisting of two distinct lateral dentate or entire, often extremely small, lobes.

The capsule is commonly depressed, but a form with an elevated conic capsule, var. *conocarpa*, is not rare. Both often grow together, and cannot be distinguished otherwise.

Var. *Indica* has more crowded, smaller flowers, and perhaps a little longer styles. A specimen from Sarepta on *Alhagi Camelorum*, in the Herbarium of the St. Petersburg Botanical Garden, has still smaller flowers, but shows no other, to me, appreciable difference.

Var. *Viciæ* has often a more solid texture of the flower and fruit; which last does not open before full maturity, and may thus in herbaria sometimes seem to be indehiscent, while usually the capsules of dried specimens readily open long before they are quite ripe. A specimen from Hayti has larger flowers, fruit, and seed than any other I have seen.

C. Europæa inhabits the greater part of Europe and the mountains of Asia to the Himalaya. I have seen no specimens from Africa, or from Spain south of the Pyrenees, from Sicily or Greece. In Italy it grows near Rome! and Naples! also in Asia Minor! on the Caucasus! in Persia! Affghanistan! Thibet! and on the Himalaya! in general. Once only it seems to have been seen in America; Poiteau! in Herb. Neufchatel, gathered it on *Vicia* in Hayti, where it no doubt was introduced from Europe.

The following formidable list of synonyms shows how much this species has exercised botanists: —

C. major, Bauh. Pin. 219; DC. Fl. Fr. III. 644; DC.! Prod. IX. 452. *C. filiformis*, *a*, Lam. Fl. Fr. II. 307. *C. tetranda*, Mœnch Meth. 461. *C. vulgaris*, Pers. Syn. I. 289. *C. tubulosa*, Presl! Del. 215. *C. Epithymum*, Thuil. Fl. Par. 85, not L. *C. Epicnidea*, Bernhardi Thur. Gartz. 1844, nro. 4. *C. halophyta*, Fries! N. Mant. I. 8. *C. halophila!* Sum. Veg. I. 191. *C. monogyna*, Schmidt, Fl. Bohem. and in some herbaria, not Vahl. *C. Ligustri*, Areschoug, Revis. Cusc. Suec. p. 17. *C. tetrasperma*, Jan! in sched. *C. hyalina*, Boiss.! in sched., not Roth. — *C. Segetum*, Rota in Giorn. Bot. Ital. II. 247, and *C. Viciæ*, Schultz, ap. DesM. are overgrown and often very destructive forms on fields of *Vicia*, *Medicago*, etc. — *C. Epitriphyllum*, Bernh. l. c. 1844, nro. 4; *C. Schkuhriana*, Pfeiff. Bot. Zeit. 1845, p. 673; *C. Europæa*, var. *nefrens* Fries! Sum. Veg. I. 191, and var. *vacua* Gren. and God. Fl. Fr. II. 504, are names given to a supposed form without scales. — Var. *Pontica*, C. Koch in Linnæa XIX. 19, I have not seen. *C. brachystyla*, C. Koch! in L. XXII. 747, is a form with often patulous laciniæ and with conic capsule. *C. capillaris*, [470 (20)] Edgeworth! Linn. Transact. XX. 68, is a more densely glomerate form from the Himalaya, with short laciniæ and very short bifid scales.

8. C. Kurdica, n. sp.: caulibus capillaceis; glomerulis parvis paucifloris bractea ovata acuminata suffultis; floribus arcte sessilibus plerumque 4-meris; calycis fere ad basin divisi lobis ovato-lanceolatis acutis crassiusculis tubum corollæ superantibus; laciniis ovato-lanceolatis erectis seu conniventibus (demum capsulæ arcte cinctæ adpressis) tubo fere longioribus; staminibus quam laciniæ multo brevioribus, antheris parvis subrotundis apiculatis filamento vix brevioribus; squamis basi tubi affixis parvis hyalinis tenuissimis truncatis; stylis ovario paulo, capsula depressa multo brevioribus.

On the Gara Mountain, Kurdistan, Kotschy! Pl. Al. Kurd. 388, b. under the name of *C. minor*, fide Choisy and *C. alpina*, Hohenacker, in sched.; Kurdistan, J. Brant! in Hb. Hooker. — In texture and habit resembling *C. Europæa*, but scales even yet thinner; flowers fewer, more closely sessile; lobes of calyx and corolla acute; corolla on the fruit globose, closely investing the whole capsule; styles very short and slender, not as much divaricate as in the allied species. — Flowers 1 line long; seeds large in proportion, 0.5–0.6 lines long.

9. C. Persica, Decaisne in Hb. Mus. Par.: caule filiformi; floribus sessilibus arcte glomeratis bractea ovata seu orbiculata suffultis; calycis campanulati lobis ovatis acutis corollæ tubum superantibus; laciniis tubo vix longioribus ovatis abrupte acuminatis sæpe papillosis, erectis demum patulis; staminibus brevibus; squamis spatulatis laciniato-fimbriatis faucem æquantibus incurvis; stylis brevibus subulatis vix ad medium stigmatosis in capsula tenuissima depressa corolla investita suberectis.

Ispahan, Persia, Aucher-Eloy! Herbier d'Orient in Hb. Mus. Paris, without number, apparently on some species of *Lactuca*. — A very distinct species, of which a single specimen only has come under my observation. The tough corolla totally invests and, as it would seem, supports the extremely thin capsule, just as in *C. capitata*, to which it is also allied by the subulate styles; scales larger than in any allied form, their fringes covering the top of the capsule. — Flowers 1½ lines long; seeds ½ line long, strongly reticulate.

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14. C. ARABICA, Fresenius! Pl. Ægypt. p. 165; Choisy! Cusc. 175, t. 1, f. 2, and DC. Prod. IX. 453; not of Wight. *Cassuta Arabica*, DesM. Et. 72. — A well-marked species, the most common one in Egypt, and extending to the eastern shore of the Red Sea. It was collected in the former country by Bové! 354; Aucher-Eloy! 1418; S. Fischer! Kralik! and before all these by Lippi! — in Hb. Vaillant, where it is labelled as "Cuscuta sulphurei coloris Ægyptiaca, flore niveo," etc., — Arabia, on the Sinai, Rueppell! Schimper! nro. 140. — I cannot see how it is possible to ascribe to it capitate stigmata; nor is the capsule exactly baccate. This last error, however, is easily accounted for, as only the fully ripe capsule will separate from the base, and with quite a small opening. — The Sinai plant — the original *C. Arabica* — has shorter pedicels, denser glomerules, cordate-sagittate anthers, and larger, even incurved, scales. Var. *Ægyptiaca* is distinguished by its longer pedicels, looser umbel, rather orbicular anthers, and smaller, often bifid scales, which sometimes seem to be reduced to mere teeth. It may possibly be the luxuriant form, corresponding to *C. Trifolii*, and growing on cultivated plants. [473 (23)]

SECT. 3. CLISTOCOCCA.

This group, represented by a single Asiatic species, is closely allied to *Epistigma*, but distinguished from it and all its other allies by the really baccate capsule, which at maturity separates from the persistent calyx, entirely covered by the closely enveloping corolla. The styles are subulate, much thicker at base, usually longer than the thin and pointed stigma. Flowers sessile, densely clustered.

15. C. CAPITATA, Roxb. Fl. Ind. I. 448. *C. rosea*, Jacquemont! in Hb. — Roxburgh's description, as far as it goes, agrees well enough with the species I take for it, which is, so far as I know, the only papillate Cuscuta in India; but it seems to be far from common there. It is, on the contrary, confined to the mountain districts, and to an elevation of from 6,000 to 12,000 feet. — The lanceolate lobes of the deeply slit calyx and corolla are covered with hemispherical or subcylindric papillæ, consisting of numerous very minute cells; scales in the lower part of the tube, not reaching to the middle, rounded or bilobed, dentate; styles as long as ovary, much shorter than capsule; capsule very thin and fragile, but strengthened by the dry corolla forming a tough coating over it; intrastylar aperture large. — Flowers over $1\frac{1}{2}$ lines long, often rose-colored; seed oval, 0.6 lines long.

India "in great abundance on *Crotalaria juncea*," Roxburgh; on the Himalaya, on some *Artemisia*, Jacquemont! 1550; on *Thymus*, 7,000 to 10,000 feet high, Thomson! in Kumaun, 12,000 feet high, Strachney and Winterbottom! nro. 3, in part (in some herbaria the Indian form of *C. Europæa* is preserved under this number). [474 (24)]

SECT. 4. PACHYSTIGMA.

Stigmata cylindric or oblong, obtuse, thicker than the filiform styles. Capsules bursting transversely, late, and not by a proper joint. Seeds compressed, indistinctly triangular, obliquely truncate at base, with a very short perpendicular or slightly oblique hilum.

Flowers pedicelled, disposed in a loose fascicled inflorescence; pedicels usually supported by bracts, only the latest ones naked. Corolla remaining on the top, or, in *C. Africana*, at the base of the capsule.

The three species of this group inhabit southern Africa, and are usually parasitic on evergreen shrubs. The form of the stigma is intermediate between that of *Eucuscuta* and of *Grammica*, and the inflorescence is similar to that of the latter.

16. C. ANGULATA, n. sp.: caulibus filiformibus; bracteis lineari-lanceolatis; pedicellis capillaceis flore longioribus (ultimis brevioribus) ramosis laxe fasciculatis; calycis profunde 5-partiti ad commissuras alato-angulati lobis late ovatis obtusis tubum corollæ late campanulatum superantibus; laciniis corollæ ovatis obtusis demum patulis stamina æquantibus; antheris obtusis basi profunde cordatis filamento subulato vix brevioribus; squamis ovatis fimbriatis tubum fere excedentibus incurvis; pistillis ovario parvo depresso-globoso bis terve longioribus tubum excedentibus, stigmatibus cylindricis seu subclavatis stylo ipso brevioribus. — *C. Africana*, Choisy! Cusc. 176, and DC. Prod. IX. 454, pro parte, *fide* spec. in Hb. De Cand. et cit. nec descript. *C. Africana*, c. Drege! in sched.

Cape of Good Hope, Dutuitskloof, 3,000 feet high, on *Staavia*, Drege! Mund and Maire! Harvey! in Hb. Hooker; Roxburgh! in Hb. Lambert, now Delessert. — The broad and short flowers, with broadly oval and obtuse lobes, and the 5-angled, or rather winged calyx, distinguish this species at first sight from both its allies. Choisy has confounded it with his *C. Africana*, as not only his reference to Drege's specimen but also his own label to this same specimen in De Candolle's authentic herbarium prove. — Flowers about $1\frac{1}{4}$–$1\frac{1}{2}$ lines long, $1\frac{3}{4}$ wide when fully expanded; styles usually longer than stigmata, only in very young flowers of the same length. Fruit and seed not seen.

17. C. NITIDA, E. Meyer! in sched.; Choisy! Cusc. 177, t. 2, f. 1, and DC. Prod. IX. 454. — Well distinguished by the broad and acute lobes of the calyx, the narrowly lanceolate acute laciniæ, and the stigmata, which usually are much longer than the styles, rarely of the same length; stamens half as long as laciniæ; incurved scales as long as, or sometimes longer, than tube; capsule irregularly circumscissile. [475 (25)]

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This is *C. Africana*, a. Drege! *C. Africana*
ss. 177, and DC. Prod. IX. 454, is the same
specimen in Hb. Delessert. This specimen is
sea, in Thunberg's handwriting. This ma
C. Americana, and afterwards named *C. A*
sea if this be so, it will be better to lea
Thunberg confounded both species. A
Museum of the Jardin des Plantes, a sp
Thunberg ded." So it seems that at o
known, this plant does not occur a
and confounded all these plants u
regions.

C. nitida seems to be one
almost every botanist. Dr.
specimens exhibit a granula

18. C. AFRICANA, T
parte.—I have above st
retaining his name for
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This is *C. Africana, a.* Drege! *C. Africana,* Ecklon & Zeyher! 20, 77, 11, and 21, 1, 11. *C. Burmanni,* Choisy! Cusc. 177, and DC. Prod. IX. 454, is the same plant, as I have satisfied myself by a careful examination of the original specimen in Hb. Delessert. This specimen is further interesting as it bears the inscription "*C. Americana,*" it would seem, in Thunberg's handwriting. This may therefore be the original plant, which Thunberg first took for Linnæus' *C. Americana,* and afterwards named *C. Africana,* so that *C. nitida* would be the true Thunbergian *Africana;* but even if this be so, it will be better to leave the nomenclature as at present established, especially as quite probably Thunberg confounded both species. Another fact bearing on this question is, that in Jussieu's Herb., now in the Museum of the Jardin des Plantes, a specimen of *C. Chinensis* is preserved, labelled "*C. Americana, Thunb. C. B. Sp. Thunberg ded.*" So it seems that at one time Thunberg himself took *C. Chinensis* for his *Americana;* but as, so far as known, this plant does not occur at the Cape, it is quite possible that he brought this specimen from India or China, and confounded all those plants under one name. He does not mention *C. Chinensis* or any other *Cuscuta* from those regions.

C. nitida seems to be one of the commonest species at the Cape of Good Hope, and has been collected there by almost every botanist. Dr. R. C. Alexander communicated a specimen with firmer red stems; some of Drege's specimens exhibit a granulated, somewhat scabrous, calyx.

18. C. AFRICANA, Thunberg? Fl. Cap. 568 and Phyt. Bl. 17; Choisy! Cusc. 176 and DC. Prod. IX. 454 pro parte. — I have above stated my doubts about the identity of Thunberg's plant, and my reasons, nevertheless, for retaining his name for this species. The older botanists also seem to acknowledge this for *C. Africana,* as I find a specimen thus labelled in Willdenow's Herb. nro. 3161. Choisy's description entirely refers to this plant, though one of the specimens he cites belongs to *C. angulata.*

It is well characterized by the very loose inflorescence, the long pedicels, the capillary styles, which are much longer (often more than twice as long) than the oblong and thick divergent stigmata; calyx short, lobes broad, obtusish, verrucose, imbricate; laciniæ linear-oblong, obtusish, involute at the margin and at tip, erect or spreading; scales large, often longer than the tube, incurved; capsules, in the only specimen in which I could find any, almost baccate, or opening very late, with the corolla persistent at base, mostly with a single globose [476 (26)] seed, 0.7 lines long; flower 1–1½ lines long. — *C. Americana,* Thunb. Prod. 32, not of Linnæus, is the same as his later *C. Africana.* — Our plant was collected by Drege! 7010, and labelled by him *C. Africana, d;* it is Ecklon and Zeyher's! 22, 70, 10. *Schrebera schinoides,* L. Sp. 1662, is — as the figure in Nov. Act. Ups. I. t. 5, f. 1, shows — this species parasitic on *Myrica Africana. C. fusiformis,* Willd. Rel. in R. and S. VI. 209, referred here by Choisy, a misprint for *C. funiformis,* as spelt in Willd. Herb. nro. 3156, is not a *Cuscuta,* but a *Cassyta* from the Cape, as Schlechtendal has long since stated.

C. Capensis, Choisy! Cusc. 175, t. 1, f. 4, and DC. Prod. IX. 454, is a large form of this species; flowers 2¼–2¾ lines long; calyx smoother and shorter; laciniæ longer, somewhat acutish; scales smaller. It bears the same relation to *C. Africana* that *C. Trifolii* does to *C. Epithymum.* — Drege! 7833, Dr. Thom! Dr. Alexander!

SECT. 5. EUGRAMMICA.

Styles of unequal length, subulate or cylindric; stigmata capitate; capsule bursting transversely more or less regularly, in *C. Jalapensis* regularly circumscissile; seeds often only one or two in each capsule, rounded or flattened, truncate at base, or hooked; hilum forming a transverse or oblique, rarely a perpendicular line, often very short, or reduced to a point.

The inflorescence is quite variable, forming few-flowered loose cymes, or compound racemose or umbelliform cymes with pedicelled flowers, or compact clusters with subsessile flowers, with bracts at the base of each, or at least the primary pedicels or flowers. The corolla remains at the base or on the top of the capsule, or completely envelops it.

Most species of this section inhabit South America, the West Indies, and Mexico. One (*C. umbellata*) extends into the southwestern parts of the United States, and two (*C. odontolepis* and *C. applanata*) are peculiar to that region; two others are natives of Asia, one extending to New Holland, the other to eastern Africa.

§ 1. Subulatæ.

Styles thick and short, subulate from a broad base; flowers mostly large and of a firm texture; scales wanting in one (the first) species; corolla enveloping the whole or the greater part of the ripe capsule in all but the first; capsule opening readily by more or less regular circumscission.

* Lobes of calyx orbicular, imbricate. [477 (27)]

19. C. GRANDIFLORA, HBK.! N. Gen. Sp. III. 123, t. 213; DC. Prod. IX. 457; not Wallich Cat. — This beautiful and striking species is so well described by Kunth that it is not necessary to add a single line. He already mentions (as he also does in regard to *C. Popayanensis*) the circumscissile opening of the capsule, ignored

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by later writers. The *raceme* of flowers on the left side of his otherwise very correct figure is imaginary, as the inflorescence is a loose few-flowered cyme. The flowers have a diameter of full 4 lines, and are 2½–3 lines high; the subulate filaments are inserted a little below the throat; no trace of scales visible; styles and capsule scabrous or verrucose; dry corolla at base of capsule; ripe seeds only 0.8 lines in diameter, almost globose, very rough; hilum a mere dot.

This species is peculiar to the Andes about the Equator; New Granada, Humboldt! Purdie! Goudot! Peru, Haenke! Cl. Gay! Weddell! 4768; Bolivia, Weddell! 4518; Chili, Edmonston!

20. C. ODORATA, Ruiz & Pavon! Fl. Peruv. I. 69, t. 105, f. a., not Choisy nor Pœppig. *C. intermedia*, Choisy! Cusc. 179, t. 2, f. 3, and DC. Prod. IX. 455; Gay, Fl. Chil. IV. 447. — After examining the original specimen in Hb. Ruiz, now in the Royal Herbarium at Berlin, and the almost identical one in Hb. Pavon, now in the possession of E. Boissier of Geneva, — which latter is the original for Choisy's description, — I can have no doubt about the identity of these plants. — Flowers 3 lines long, 3–4 lines in diameter, on very short pedicels, forming dense lateral clusters; laciniæ rather longer than the shallow tube; scales very large, deeply fringed; corolla surrounding and partly covering the irregularly circumscissile capsule; seeds triangular-rounded, nearly 1 line long. — In the Flora Peruviana the capsule is already figured as circumscissile; but the whole figure, especially the details, are not very correct, and rather calculated to mislead.

Peru, Ruiz! Pavon! A. Matthews! 486; Weddell! 4693; Ecuador, Seemann! 852; Chili, Cl. Gay! 38 & 815. — In Weddell's specimen the tube is more cylindrical and longer and the lobes rather shorter, uniting this species with

Var. β.? BOTRYOIDES, from southern Brazil, Lobb! 49, in the Kew Herbarium. — Dense clusters of flowers, arranged in long pendulous bunches resembling grapes; tube deeply campanulate, almost cylindric, nearly twice as long as the broad, rounded laciniæ; corolla enveloping the widely gaping capsule, the styles of which are shorter and thicker than in *C. odorata;* stylar portion of dissepiment broad and jagged. — Apparently intermediate between this and *C. Chilensis*, and perhaps specifically distinct. [478 (28)]

[20ᵇ. C. GLOBIFLORA, n. sp.: caulibus filiformibus crassiusculis; glomerulis paucifloris compactis; floribus subsessilibus bractea una alterave orbiculata concava suffultis; calycis fere ad basin fissi lobis orbiculatis imbricatis margine tenuissimo ciliolatis tubum corollæ ventricosum globosum subæquantibus; laciniis ovato-orbiculatis crenulatis imbricatis erectis seu conniventibus tubo brevioribus; antheris ovatis filamento brevissimo longioribus; squamis magnis ovatis breve fimbriatis faucem pene attingentibus; stylis ovario globoso æquilongis. [520 (70)]

Cuzco, Bolivia, at an elevation of 11–12,000 feet, Pentland! in Hb. Hooker. — Glomerules in the single specimen seen 6–7 lines in diameter, consisting of 2–5 flowers; flowers with the thick calyx and the surrounding bracts almost globose, 3–3½ lines long, a little less in diameter; corolla really ventricose or urceolate; ovary globose or even depressed; I could not ascertain whether the styles become subulate; stigmas small and slightly conic; in the dried state the young capsule seems to be circumscissile even long before maturity; corolla apparently covering the capsule. Evidently closely allied with *C. odorata*, to which in habit and inflorescence it bears a great resemblance.]

21. C. JALAPENSIS, Schlechtendal! Linnæa, VIII. p. 515. — Though well and carefully described, and published as early as 1833, this well-marked species has been overlooked by later writers. It is similar to the last, but much smaller; flowers, though on short pedicels, much less crowded. Its most striking character consists in the regularly circumscissile conic capsule, with shorter very strongly subulate styles, whence Schlechtendal not inappropriately calls it "bicornis." [478 (28)]

Peculiar to Mexico; Jalapa, Schiede! 152; Linden! 308; near Mexico, Graham! 250; Bustamente! 83; Oaxaca, Galeotti! 4413.

22. C. CHILENSIS, Ker, Bot. Reg. VII. f. 603; Choisy! in DC. Prod. IX. 455; Gay! Fl. Chil. IV. 446. *C. odorata*, Pœppig! in Hb. 90. — A common plant in Chili, whence almost every collector sends it; well characterized by the densely clustered almost sessile flowers, cylindric tube, large, linear, almost sessile anthers, and short deeply fringed scales; styles as long as the irregularly circumscissile capsule, even in fruit scarcely reaching to the throat of the tube; seed oval, triangular, compressed, 0.7–0.8 lines long, with a small umbilicus marked with radiating lines, which centre in the small round hilum.

[*C. odorata*, Choisy! Cusc. 180, t. 2, f. 4; DC. Prod. IX. 456; Gay! Fl. Chil. IV. 447, not Ruiz & Pavon, according to the description and figure of Choisy and the authentic specimens in Hb. De Candolle, does not essentially differ. The specimens of Gay, 816 and 817, and of Bertero, 940, have a thinner, more membranaceous texture than the ordinary *C. Chilensis*, but Gaudichaud's specimen is absolutely identical with it.] [520 (70)]

* * Lobes of calyx acute. [478 (28)]

23. C. FŒTIDA, HBK.! N. Gen. Sp. III. 122; DC. Prod. IX. 460, not Hook. & Arn. Bot. Beechy. *C. pycnantha*, Bentham! Pl. Hartw. p. 226. *C. corymbosa*, Jussieu! in Hb. Juss. — Clusters large and

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compact, ½–1 inch in diameter; flowers fully 3 lines long; lobes of calyx and of cylindrical corolla very acute or acuminate; stamens very short; scales much shorter than the tube, in Humboldt's specimen broadly oval, in others narrow; styles strongly subulate, as long as capsule; seeds 0.6 lines long.

Quito, 8,000 to 10,000 feet high, Humboldt! Couthouy! Peru, Jos. Jussieu! Ecuador, Seemann! Columbia, Hartweg! 1238.

24. C. ACUTILOBA, n. sp.: caule filiformi; cymis laxis paucifloris; pedicellis brevibus bracteis lanceolatis acuminatis suffultis; calycis campanulati lobis triangulatis acutis tubum corollæ profunde campanulatum æquantibus; laciniis lanceolatis acutissimis erectis demum reflexis tubum æquantibus seu paulo longioribus; staminibus multo brevioribus, filamentis anthera ovata brevioribus; squamis spatulatis fimbriatis faucem fere æquantibus; stylis e basi crassa subulatis ovarium æquantibus inclusis; capsula corolla marcescente tota involuta [479 (29)] irregulariter circumscissa.

At the Bridge of Obragilla, Peru, Alex. Matthews! 661 in Hb. Hooker. — Very nearly allied to the last, distinguished by the loose, few-flowered inflorescence, the small and apparently deep purple (a color not noticed in any other species) flowers, the triangular, not imbricate, lobes, the short tube of the corolla, and the still more broadly subulate styles. By the styles it is distinguished from *C. umbellata*, which it otherwise considerably resembles. — Flowers 1¼–1½ lines long; single seeds globose.

§ 2. Obtusilobæ.

Styles slender, usually capillary; flowers large or small, usually thin and membranaceous; lobes of calyx obtuse in all but the last species; corolla short in the three first, long and cylindric with short laciniæ in the four last species; scales absent in one (the last) species; styles short in the first, very long in the four last species; capsule opening late, and mostly irregularly; dead corolla enveloping the capsule except in the first species.

* Flowers short.

25. C. APPLANATA, n. sp.: caule filiformi; floribus breviter pedicellatis vel subsessilibus in glomerulos densos sæpe continuos congestis; calycis campanulati tenuis lobis ovatis obtusis tubum corollæ late campanulatum depressum æquantibus; laciniis ovatis obtusis patulis demum reflexis tubo æquilongis; antheris oblongis filamenta brevia subulata æquantibus; squamis maximis crispato-laciniatis faucem excedentibus supra ovarium magnum depressum incurvis; stylis capillaribus ovarium æquantibus seu excedentibus e fauce exsertis; capsula depressa corolla marcescente involuta irregulariter circumscissa.

In Arizona Territory, south of the Gila River, Chs. Wright! Mex. Bound. Survey, 1623 (541), on some *Nyctaginea*, and 1625 (685) on *Ambrosia;* fl. Sept. — Glomerules 3–4 lines in diameter, often strung together like beads; 6–12 flowers in each glomerule, 1–1¼ lines long, of thin texture and white color, on short branched pedicels, supported by small obtuse bracts; capsule 1 line in diameter, half as much in height, with a very small intrastylar opening; seeds ½ line long, oval, strongly verrucose-reticulate, with a short and broad oblique or perpendicular hilum. In aspect this plant resembles somewhat *C. arvensis*, but is abundantly distinct from this and any other species.

26. C. CHINENSIS, Lamarck! Enc. II. 229; Choisy! Cusc. 183, t. 3, f. 4, and DC. Prod. IX. 457. *C. sulcata*, Roxb. Ind. I. 447; Wallich! Cat. 1320[2]. *C. capillaris*, Wall.! Cat. 1321. *C. Americana*, Thunberg! in Hb. Jussieu. *Grammica aphylla*, Loureiro! Cochin. 171; ed. Willd. I. 212. — A common plant, as it [480 (30)] appears, of the tropical regions of Asia and the islands southward, especially Ceylon, extending into Candahar (Griffith! 685) and China (in Hb. H. B. Petropol.! as "*C. fimbriata*, Bunge," which name seems to be apocryphal), characterized by the strongly carinate rather than sulcate lobes of the thereby 5-angled calyx, with five secondary angles at the commissures; scales rather large, deeply laciniate, and not, as Choisy describes and figures them, short and adnate below the throat; styles slender; capsule very thin, enveloped and covered by the corolla, opening at base rather irregularly and late, and therefore often termed "baccate;" Loureiro himself describes the fruit of his genus *Grammica* as a "bacca," though his original specimen in the Hb. of the British Museum shows the circumscissile capsule. Flowers 1–1¼ lines long; seeds 0.5–0.7 lines long, oval; hilum oblique or usually nearly perpendicular. — Lamarck's original specimen, accidentally raised in the Jardin des Plantes of Paris, in 1784, with seeds supposed to have come from China, is preserved in Hb. Jussieu in Mus. Paris.

C. hyalina, Wight, Ic. 1372; Wallich! Cat. 1320[1], not Roth, is a form of this species, with bifid and rather small scales.

A form from the island of Nassibé, near Madagascar, Boivin! in Hb. Vindobon., has also bifid scales, but is distinguished from all other varieties by the capsule being exsert above the corolla, and by the large intrastylar aperture.

Var. β. CARINATA, *C. carinata*, R. Brown! Prod. N. Holl. I. 491, from the tropical parts of New Holland, is the same species, with more strongly carinate and more obtuse lobes of the calyx, more obtuse laciniæ, and almost globose anthers.

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Var. γ. CILIARIS, *C. ciliaris*, Hohenacker! in Pl. Kotschy, Boissier! Diag. Or. II. 3, 129, is a stouter, larger-flowered northern form of the same plant, with shorter and stouter styles ; scales spatulate, or sometimes in the same flower bifid, less deeply and finely fimbriate; flowers $1\frac{3}{4}$–$2\frac{1}{4}$ lines long. — Mossul, Kotschy! 431; Kurdistan, Grant! in Hb. Torrey. — The specimen of Herb. Wight. propr. ! 2408, is the same thing from India. The largest-flowered form is preserved in Hb. Mus. Paris, under the name of *C. exigua*, collected at the Selenga River, in Siberia, by Demidoff, a cotemporary of Pallas ; lobes of calyx and corolla in this specimen more distinctly crenulate than in most other forms of the species.

27. C. TINCTORIA, Martius! in Herb.: caulibus filiformibus subfunicularibus ; floribus globosis pedicellatis in glomerulos laxos umbelliformes congestis; calycis cupulati lobis orbiculatis imbricatis tubum corollæ campanulatum æquantibus ; laciniis tubo æquilongis ovatis obtusis basi imbricatis erectis seu demum [481 (31)] patulis reflexive ; antheris ovatis filamento subulato brevissimo plerumque longioribus ; squamis late-ovatis fimbriato-laceris tubum æquantibus seu paulo excedentibus incurvis ; stylis filiformibus ovario depresso longioribus fere exsertis ; capsula irregulariter circumscissa corolla marcescente involuta tectaque.

Mexico, usually, as it seems, on trees ; Oaxaca on *Schinus molle*, Karwinski! who relates that the natives use it under the name of "Zaca-tlascalli" as a yellow dye, — and, indeed, the dried specimens tinge water, paper, etc., deep yellow, which I notice also in some other South American *Cuscutæ ;* San Luis Potosi, on the same species of tree, Dr. Gregg! in full bloom in December. — Flowers 2–$2\frac{1}{2}$ lines long, in loose clusters, of six lines in diameter, which are gathered into long racemes ; intrastylar aperture small ; seed compressed, rounded, 0.6 lines in diameter. — The slender style and the shape of the capsule distinguish this species from the similar *C. Jalapensis*, the short flower and short style from *C. floribunda*, the circumscissile capsule and larger flower from *C. Gronovii*, and the short filaments from all of them A specimen, however, in the Hb. H. Bot. of St. Petersburg, collected by Karwinski on an oak "between Victoria and the Rio Blanco," has filaments as long as the anthers.

* * Flowers elongated.

28. C. FLORIBUNDA, HBK.! N. Gen. Sp. III. 123; DC. Prod. IX. 459. — The only specimens of this plant known to me, gathered by Bonpland ! at the Bridge of Istla, in western Mexico, 3,000 feet high, are preserved in the Royal Hb. at Berlin and in Hb. Willdenow, nro. 3159[3]. They are in rather poor condition, and in ripe fruit only. Enough is left, however, to show that the plant is nearly allied to *C. Popayanensis*, as Kunth already states, but well distinguished by the short and thick, orbicular, deeply divided, broadly imbricate lobes of the calyx ; the deeply divided corolla ; the oblong linear (obtuse, not acute, as Kunth has it) laciniæ nearly equalling in length the cylindric tube ; large oval scales deeply fimbriate-laciniate, reaching to the throat ; styles twice as long as capsule, slender, long exsert in fruit ; stylar portion of dissepiment elongated, almost reaching the base of the capsule ; seed 0.8 lines long, narrow, triangular, and very rough. Flower with the lobes 3, or, when these are reflexed, 2 lines long. From *C. tinctoria*, to which it is even more closely allied, it may be distinguished by the long tube, the narrow laciniæ, the long styles, and the long and narrow seeds.

29. C. AMERICANA, L. Sp. 180 pro parte; Jacq. Am. 30, p. 17 ; Choisy ! Cusc. 186, t. 4, f. 4 ; [482 (32)] DC. Prod.IX. 459. *C. graveolens*, HBK.! N. Gen. Sp. III. 122. — This is the most common species of the West Indian Islands, parasitic mostly on shrubs and trees. It extends to the Pacific coast of Mexico, and on the Atlantic coast of South America from Venezuela to Brazil ; rarely, as it would seem, leaving the neighborhood of the sea-coast, though Weddell found it in the province of Goyaz, in central Brazil. — Well characterized by the small, cylindric corolla, with short, very obtuse, almost always erect laciniæ slightly protruding over, or sometimes almost enclosed by, the wide and deep cupulate calyx ; scales short, attached to the middle of the corolla, and usually not reaching to its throat ; styles very slender, mostly much longer than the very small globose ovary, exsert only in fruit; capsule late and irregularly circumscissile ; stylar portion of dissepiment reaching nearly to the base of the capsule ; seeds mostly solitary, filling the whole capsule, roundish, somewhat compressed; hilum forming a very short line, almost a point.

The ordinary *C. Americana* has flowers $1\frac{1}{4}$–$1\frac{1}{2}$ lines in length ; a thin, when dry, membranaceous and very wide calyx ; scales either truncate, sometimes almost bilobed, slightly dentate, or somewhat fimbriate ; styles usually included during flowering, more or less exsert in fruit. — Martinique, Sieber ! 91 ; Hayti, Poiteau ! Ehrenberg! Antigua, Wullschlægel ! with larger flowers; Portorico, Bertero! St. Thomas, Ridlé ! Holton! Yucatan, Linden ! Venezuela, Humboldt! Karsten! Fendler! 2069 ; Surinam, Hb. Ac. Phil.! Brazil, Gardner! 1775; Blanchet! 736 ; Goyaz, Weddell! 2208.

Different varieties may be distinguished according to the length of the pedicels, size of flower, texture of calyx, shape of scales, and length of styles; but they run into one another so that I, with twenty-five or thirty specimens from the whole range of the species before me, am unable to limit even these varieties. The smallest form is *C. congesta*, Bentham! Bot. Sulph. 138, from Acapulco : flowers crowded; scarcely more than 1 line long ; scales triangular, almost entire ; styles slender. A similar plant was collected by Dr. Gregg at Mazatlan ; flowers rather

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more slender, calyx narrower than
commissures); scales and styles
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more slender, calyx narrower than in any other form, and more distinctly 5-angled (angles corresponding to the commissures); scales and styles as in the other. *C. leiolepis*, Miquel! Linnæa, XVIII. 247, is the same thing from the orange hedges in Surinam, but with shorter styles than any other form of this species examined by me. *C. Surinamensis*, Schilling, de Lepra, pp. 60 and 200, t. 2, also seems to belong here. *C. campanulata*, Nuttall! mss. in Hb. Ac. Phil. from the West Indies, has the scales of this, but otherwise is identical with the ordinary form.

Another form has a thicker, more coriaceous calyx, usually larger flowers ($1\frac{1}{2}$–$2\frac{1}{4}$ lines long), larger [483 (33)] more deeply fimbriate scales, often exsert styles, and sometimes 2-seeded capsules. This is *C. spectabilis*, Choisy! Cusc. 187, t. 5, f. 1; DC. Prod. IX. 459, from Bahia, Salzmann! 351; Blanchet! 85, and *C. globulosa*, Bentham! Bot. Sulph. 138, from Acapulco. The specimens from Surinam, Hostmann! 464, one of Poiteau's! from Hayti, and especially Linden! 1994, from Cuba, the largest of all, may be referred here.

C. Americana, L., and of most authors on the Flora of North America, comprises, besides this, several North American species, especially *C. Gronovii*, *C. arvensis*, and *C. compacta*. *C. Americana*, Thunb. is *C. Africana*.

30. C. CORYMBOSA, Ruiz & Pavon, as intended by the authors, is a rare form of a species which, under different names, is common throughout northern South America and Mexico. The species, as here proposed, is distinguished by the cupulate membranaceous calyx, with short and broad very obtuse lobes, loosely enclosing the lower part of the long cylindric tube of the corolla; laciniæ short, mostly very obtuse, erect or rarely spreading; anthers oval or orbicular-oval, sessile or on very short filaments; scales mostly long and narrow, attached for the greater part of their length, more or less fringed at the sides and apex, always considerably shorter than the tube, rarely quite small and indistinct; ovary small, globular or conic, with very long styles, which generally reach as high as the anthers, and often become exsert as the fruit ripens; capsule very small, often 1-seeded, always opening in its largest diameter, surrounded and covered by the base of the shrivelled corolla; stylar portion of dissepiment reaching nearly to the bottom of the capsule; hilum reduced to a point. Very closely allied to the last species, but readily distinguished by the larger flowers and the larger elongated and exsert corolla.

Var. *a.* GRANDIFLORA: flowers large, 3–4 lines long; anthers on very short filaments or sessile; scales long and narrow, almost entirely adnate, rarely bifid; styles reaching the anthers or shorter; ovary and capsule globose or rarely somewhat conic. *C. Popayanensis*, HBK.! N. Gen. Sp. III. 123; DC. Prod. IX. 460, of which Kunth already mentions the capsule as circumscissile, and speaks of the close alliance to *C. corymbosa*. *C. cymosa*, Willd.! rel. R. & Sch. VI. 205, founded on the same specimen. — New Granada, Humboldt! Columbia, Hartweg! 1237; Moritz! 489; Comitan, Mexico, Linden! 291; Caracas, Birchel! Gollmer! Venezuela, Fendler! 946; Peru, Dombey! in Hb. Mus. Paris, under the name of *C. corymbosa*.

The following forms do not seem sufficiently distinct from this: *C. patens*, Benth.! Bot. Sulph. 35, [484 (34)] from the Magdalen Bay, Lower California, has rather wider and a little shorter flowers and shorter styles, which reach only as high as the linear scales.

C. inclusa, Choisy! Cusc. 179, t. 2, f. 2; DC. Prod. IX. 455, from Mexico, Berlandier! 1103. — Similar to the last; styles even longer, but scarcely reaching the throat; anthers sessile. Choisy's figure shows long filaments, and his description speaks of "stamina basi corollæ affixa," etc., which is perfectly unintelligible. Choisy's figures are by no means reliable in the details; as is evident in examining, for example, the scales in his figures of *C. Arabica*, *Chinensis*, and others, the ovary of *C. Gronovii*, *Americana*, etc. This is one of the few *Cuscutæ* known to me where there is in the flower in full bloom a slight approach to the ventricose shape.

C. laxiflora, Benth.! Bot. Sulph. 138, from Acapulco, is the same plant, with a somewhat conic ovary and capsule, uniting this with the next form; flowers about 3 lines long, styles not exsert.

C. Popayanensis, Pœppig! Hb. is a variety of *C. micrantha*.

Var. *β.* STYLOSA. *C. stylosa*, Choisy! Cusc. 187, t. 5, f. 2; DC. Prod. IX. 459. — Flowers rarely more than 2 lines long, slender, with very short calyx; narrow cylindric corolla; short, narrow scales; filaments as long or shorter than anthers; styles reaching to the throat of the corolla or above it, often long exsert at maturity of fruit or before; ovary and capsule conic, or rather inversely pear-shaped. The length of the styles is variable, even in the original specimens quoted by Choisy; the shape of the capsule would be characteristic enough, if intermediate forms did not indicate a transition to var. *grandiflora*. — Found thus far only in Mexico: Andrieux! 73 and 214; Berlandier! 822; Hb. Jacquin! under the name of *C. Americana;* Ghiesbrecht! 186; Toluca, Karwinski! Zimapan, Galeotti! 1412; Jalapa, Linden! 308 in part.

In the Kew Herbarium I find a specimen sent by Botteri from the Orizaba, Mexico (nro. 949), which is this form with scarcely exsert styles, larger flowers (3 lines long), and acutish crenulate laciniæ.

Var. *γ.* MICROLEPIS. *C. corymbosa*, Ruiz & Pavon! Fl. Peruv. I. 69, t. 105, b., not Choisy Cusc. nor DC. Prod. — Flowers $1\frac{3}{4}$–2 lines long, as often 5- as 4-parted in the original specimens in Hb. Ruiz and in Hb. Pavon, both of which seem to be parts of one and the same specimen; calyx cupulate, with short obtuse lobes half as long as the corolla; laciniæ ovate, obtuse, nearly one third the length of the tube, erect or patulous; filaments as long as the

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broadly ovate-cordate anthers ; scales reduced to very thin and small ovate membranes, with 4–7 or 8 ir- [485 (35)]
regular teeth inserted below the middle of the tube, perhaps sometimes entirely wanting; ovary slightly conic, with styles scarcely reaching to the throat, just exsert in fruit. In the figure in the Flora Peruviana the cylindric corolla and the circumscissile capsule are correctly given. — Peru, on shrubs, and on *Medicago sativa*, Ruiz & Pavon! not found since.

It is well known that Choisy, l. c., and every author after him, myself included, took the *Cuscuta* — which twenty years ago made its appearance in different parts of Europe, in fields of *Medicago*, said to have been imported from Chili — for this species. The figure, as well as the original specimens, prove this to have been a mistake ; that plant is *C. racemosa*, Mart., as will be shown below. Whether the scales are ever really absent, or only very small and difficult to find, I cannot say. In eight or ten flowers which I carefully examined I could not always discover them, especially after soaking the flowers; unfortunately, the specimens are injured by too hard pressing. With the exception of the smaller flowers and indistinct scales, I find nothing to separate this from the other forms, which are more abundant and better developed, but had to yield their specific names to priority.

31. C. PRISMATICA, Pavon! mss.; Choisy! Cusc. 182, t. 3, f. 2; DC. Prod. IX. 457. — A very distinct species, and one of the few without any scales. Choisy's figure as well as description is not very correct. Bracts lanceolate acuminate; flowers subsessile, 3 lines long; calyx elongated, obconic, fleshy, deep red, 5-angled from the decurrent carinæ of the unequal, ovate, acute or cuspidate imbricate lobes; corolla almost cylindric, long exsert, externally granulated, laciniæ 4–6 times shorter than the tube, oblong, obtuse, somewhat involute at the margins, crenulate; anthers ovate-cordate, sessile ; ovary turbinate ; capillary styles shorter than the tube, much longer than the ovary. I have seen no fruit of this plant, but venture to class it here on account of its close affinity with the last species, from which, however, it is abundantly distinguished by all the characters above enumerated. The only specimens seen are from Guayaquil, Pavon! in Hb. Boissier, and Hænke! in Hb. Mus. Bohem. Pr.

§ 3. Leptolobæ.

Styles slender, usually capillary; flowers rather small, membranaceous; lobes of calyx and corolla acute, often acuminate, commonly narrow and elongated, as long or longer than the usually campanulate tube; scales absent only in the last species; capsule surrounded or covered by the corolla, opening by irregular or rather regular circumscission.

32. C. ODONTOLEPIS, n. sp.: caulibus tenuiter filiformibus ; floribus breviter pedicellatis bracteatis [486 (36)]
in glomerulos laxiores demum decompositos crassos confertis; calycis breviter campanulati profunde partiti nitidi lobis ovato-triangulatis acutiusculis tubum corollæ profunde campanulatum subæquantibus; laciniis ovato-lanceolatis acutis demum patulis reflexisve tubo paulo brevioribus; antheris ovatis filamenta subulata brevia æquantibus ; squamis late ovatis e tubi basi oriundis ad medium adnatis faucem fere attingentibus versus apicem grosse dentatis ; stylis capillaceis ovario depresso-globoso multoties longioribus e fauce paulo exsertis demum elongatis ; capsula corollæ rudimentis calyptrata rite circumscissa.

Near a deserted Rancho, on a rocky hill-side in Arizona, parasitic on *Amarantus;* fl. Sept., Chs. Wright! 1624 (529). — " Whole plant very white." Clusters of the large and showy flowers at last crowded, more than 1 inch in diameter ; flowers 2½ lines long, on pedicels as long or shorter than the calyx, which in one specimen covers the tube, and in another is shorter; scales large, irregularly toothed towards the apex only; capsule globose ; readily opening towards the base by a small circular aperture ; stylar portion of dissepiment scarcely half as long as capsule ; seeds usually all four developed ; oval, about ½ line long, verrucose, with a small linear vertical or transverse hilum. — In general aspect, as well as in some particulars, this species very closely approaches to *C. corymbosa*, but seems to be well distinguished by the characters given, especially the deeply divided corolla, its acute laciniæ, the broad dentate scales, the small basal opening of the capsule, the seed, etc. It is not impossible, however, that intermediate forms may yet be discovered, which will oblige a future monographer to unite them. On the other hand, the similarity to *C. subinclusa* — a Californian species, which has decidedly baccate capsules — is so great that one might be induced to doubt the diagnostic importance of this character.

33. C. XANTHOCHORTOS, Martius! in Hb.: caulibus filiformibus ; glomerulis sessilibus globosis multifloris ; bracteis ovatis ; pedicellis ramosis, ultimis calyce campanulato profunde fisso brevioribus ; lobis ovatis obtusis basi imbricatis margine sæpe reflexis tubum corollæ late campanulatum æquantibus seu superantibus ; laciniis lanceolatis elongatis acutiusculis tubo multo longioribus patulis reflexisve basi imbricatis ; antheris oblongis filamento subulato subbrevioribus ; squamis late ovatis fimbriato-laceris faucem excedentibus ; stylis capillaceis demum divaricatis ovario ovato multo longioribus ; capsula conica corollæ rudimento involuta basi regulariter circumscissa.

Porto Alegre, Rio Grande de San Pedro, Brazil, Father Joannes de Sta. Barbara! in Hb. Martius. —
The specimen consists of an intricate mass of deep yellow stems, with few heads of flowers just develop- [487 (37)]
ing; a few half-ripe but already circumscissile fruits were seen. Flowers 1½–2 lines long. This plant seems to be nearly allied to *C. umbellata*, but is distinguished by more compact heads, larger flowers, broad and

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imbricate obtusish lobes, etc. The laciniæ of the corolla, always elongated, are in some flowers acutish, in others almost obtuse.

34. C. PARTITA, Choisy! Cusc. 188, t. 5, f. 3; DC. Prod. IX. 460. — Brazil, Blanchet! 3047; Gardner! 2684; westward to Bolivia, Weddell! 3483 and 3611; and northward to Venezuela, Maracaibo, Karsten! and Curaçao, Friedrichsthal! 375, b; usually low, on herbaceous plants, *Leguminosæ*, *Malvaceæ*, *Euphorbiaceæ*, etc. — Cymes compound, paniculate; bracts ovate-lanceolate, often crenate; flowers small, usually less than 1 line long, more or less glandulous, and filled with coloring matter, deep-red when dry, like *C. miniata;* calyx divided almost to the base, lobes lanceolate acute; lobes of corolla of same shape, at length reflexed with the points incurved; tube of corolla at last ventricose, enveloping the capsule, divided by grooves which correspond to the stamens into five separate externally convex compartments, as it were; scales as long as the tube or shorter, deeply fringed; capillary styles much longer than the small globose ovary, subexsert, sometimes recurved on the fruit; capsule very thin, hyaline, irregularly circumscissile with a wide opening; seeds 0.5–0.6 lines long, obliquely ovate, or, where only one in a cell is developed, rostrate; hilum linear-oblong, short, in the former seeds perpendicular, in the latter transverse.

The specimens from Bolivia have larger, less glandulous, and paler flowers, $1\frac{1}{4}$–$1\frac{1}{2}$ lines long, "yellowish-white or rose-colored," but do not differ in any other respect.

35. C. UMBELLATA, HBK.! N. Gen. Sp. III. 121; DC. Prod. IX. 460. *C. parviflora*, Willd.! Hb. nro. 3163. — This species seems to have been unknown to all later botanists, with the exception of Torrey, who recognized Humboldt's plant in a specimen collected by Long's expedition to the Rocky Mountains. Lately it has turned up from many localities along the United States and Mexican boundary line, from northern Mexico, and from the Antilles. In Brazil a form has been collected which I cannot specifically distinguish from the Mexican plant. — The flowers of this species are arranged in loose compound fasciculate cymes, the ultimate divisions forming umbels of 3–5–7 flowers, supported by a single ovate-lanceolate bract; pedicels usually longer than the flower; flower, with the lobes of the corolla erect, $1\frac{1}{2}$–2 lines long; calyx broadly campanulate, thin and shining, at least when
dry; lobes triangular, acute, as long or longer than the shallow tube of the corolla; laciniæ narrowly [488 (38)]
lanceolate, elongate, acute, longer than the tube, spreading or reflexed; scales usually broadly oval, large,
longer than the tube, incurved; styles much longer than the globose-depressed ovary, rarely of same length; corolla enveloping the small, thin, depressed, almost 4-lobed capsule, which is commonly circumscissile, but in some instances rather irregularly bursting; seeds generally all four developed, 0.5–0.6 lines long, triangular, oblique, with a very short linear hilum.

It is always found in dry places on low herbs, especially *Portulaca*, also *Kallstræmia*, *Amarantus*, *Atriplex*, *Polygonum*, etc., and sometimes even on some prostrate *Euphorbiæ:* between Queretaro and Salamanca, Humboldt! Saltillo and Camargo, Gregg! Western Texas, New Mexico, and Arizona, Wright! 1627, 1636, 1639 (371, 510, 695), Bigelow! Schott! Santa Fé, Fendler! 659; foot of the Rocky Mountains, James! Jamaica, Broomfield! Purdie!

Dr. Hays found a specimen on the San Pedro River, Arizona, on *Suæda*, with much more dense inflorescence, greatly resembling a form of *C. Californica*, — which will be noticed below, — parasitic on the same saline plant, and mainly distinguished by the broadly campanulate, not turbinate, calyx, the circumscissile capsule, and the seeds.

Some specimens from New Mexico show a tendency to papillose pubescence; and one from Sonora, Coulter! 1010, on some *Euphorbia*, has the unusually small flowers (1 line long) quite papillose-scabrous.

Var. β.? DESERTORUM. *C. desertorum*, Martius! in Hb.: pedicels long; flowers less crowded, smaller, 1 line long; lanceolate-linear laciniæ twice as long as tube; scales small, bifid or reduced to two lateral toothed lobes; styles shorter than the exsert capsule, which is circumscissile with a small opening; intrastylar aperture large; seeds only 0.4 line long. — On *Portulaca* and *Ehrenbergia*, in the province of Piauhy, Brazil, Martius! — Another similar form, but with longer tube and shorter laciniæ and rather larger scales, was collected by Gardner! 2425, in the province of Ceara, in the same neighborhood, also on *Portulaca*.

A specimen from the island of Antigua in Hb. Martius, Wullschlægel! 352, seems to belong here, though the (unripe) capsules do not open; flowers larger and more densely clustered than in the common form, calyx and capsule glandulous, intrastylar aperture large.

36. C. GRACILLIMA, n. sp.: caulibus tenuissime capillaceis demum deciduis; floribus in fasciculos decompositos demum dense glomeratos congestis; bracteis lineari-lanceolatis; pedunculis ramosissimis; pedicellis capil-
laceis flore gracili longioribus; calycis turbinati lobis lanceolatis sæpe apice recurvis tubum corollæ paulo [489 (39)]
superantibus; laciniis lanceolatis subulatis tubo multo longioribus erectis apice subrecurvis; staminibus
lacinias superantibus, filamentis e basi subulata capillaceis, antheris ovatis; squamis laceris fimbriatis incurvis tubum excedentibus; ovario parvo globoso, stylis capillaceis longissimis antheras fere attingentibus; capsula corollæ rudimento indusiata demum irregulariter transverse disrupta; seminibus lenticularibus læviusculis. — *C. fœtida*, Hook. & Arn.! Bot. Beechy, 304, non HBK. *C. subtilis*, Chaúbard! in Hb.

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…n Eb. Delessert; Tepic, Beechy! in …
…e with stamens longer than the lobes o…
…over 1 inch thick and 2–3 inches long…
…the flowers; flowers small and slend…
…quite small; seeds usually two, O…
…nsverse or oblique hilum. — Closely a…
…te calyx, the smoothish seed. Less …

…: bracteis pedicellis totoque flore pap…
…– *C. Sidarum*, Liebm.! in Hb.
…, parasitic on different species of …
…flowers even smaller, 1¼ lines long; …
…; seeds 0.4 line long.

…. *sp.*: caulibus capillaceis; bracte…
…foliis 4-meris gracilibus; calycis gr…
…; laciniis lanceolatis acutis erecto-…
…ribus lacinias subæquantibus; squar…
…is capillaribus longissimis demum exser…
…nibus globoso-triangulatis verruculosis.
…n Wright! 1849, nro. 522; prairies …
…l with *C. umbellata*), in both instanc…
…(thus far) constantly 4-parted flowers.
…ry campanulate-globose, short in prop…
…e specimens seen, papillose or, in the …
…calyx; corolla enveloping the small cap…
…ens; seeds 2–4, almost globose, 0.4 line …

…ld! Nov. Spec. p. 100, not Wight, nor B…
…Ldg. Or. II. 3, 130. *C. acutissima*, Buc…
…ers of the East Indies (Heyne! Stocks!…
…r. 1822), is certainly the plant Roth ha…
…Fl. of the Botanical Garden of St. Pet…
…authors, as he speaks of scales, no trace…
…seen in Roth's own, nor are the flowers u…
…ey mentions that the capsule bursts irreg…
…of the specimens examined it rather adh…
…deeply bilobed lower part of the dissep…
…end of this section, uniting it with the…
…this species is closely connected, and, inde…
…en is thinner, semi-transparent, and shini…
…parts of the filaments are distinct, but n…
…like and on the capsule divaricate; the…
…almost oblong hilum perpendicular or tr…

SECT. 6. CLISTOGRA…

…raph, cylindric, rarely almost absent; …
…the calyx, or separating from it entire; …
…ule. Seeds four in each capsule, or fewer, …
…hilum linear, short or longer, transverse o…
…ge, either an umbelliform or somewhat g…
…paniculate cyme, finally more or less c…
…rious clusters of closely sessile flowers wit…
…ule or covers its top.
…richest in species, and the most common i…
…(*C. obtusiflora*) is a cosmopolite, being fo…
…*perdiculata*) is peculiar to South Afric…

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Mexico, Mornay! in Hb. Delessert; Tepic, Beechy! in Hb. Hooker; Jürgensen! in Hb. Mus. Florent. — The only species known to me with stamens longer than the lobes of the corolla; distinguished also by the large and dense masses (in one specimen over 1 inch thick and 2–3 inches long) of flowers; pedicels branched but scarcely umbellate, mostly much longer than the flowers; flowers small and slender, $1\frac{1}{4}$–$1\frac{1}{2}$ lines long; capsule opening late and irregularly; intrastylar aperture quite small; seeds usually two, 0.5 line long, compressed, rounded, slightly oblique at base, with a very short transverse or oblique hilum. — Closely allied to *C. umbellata;* principally distinguished by the inflorescence, the turbinate calyx, the smoothish seed. Less important differences are the erect laciniæ and long filaments.

Var. β. SACCHARATA: bracteis pedicellis totoque flore papilloso-adspersis; laciniis staminibus stylisque brevioribus; seminibus minoribus. — *C. Sidarum*, Liebm.! in Hb.

On the coast of Oaxaca, parasitic on different species of *Sida*, Liebmann! in Hb. Hooker. — Inflorescence the same as in the species; flowers even smaller, $1\frac{1}{4}$ lines long; laciniæ shorter; stamens shorter; anthers orbicular; capsule readily circumscissile; seeds 0.4 line long.

37. C. LEPTANTHA, n. sp.: caulibus capillaceis; bracteis ovatis acuminatis; pedicellis filiformibus lævibus umbellato-fasciculatis; floribus 4-meris gracilibus; calycis granulato-hispidi lobis triangulatis acutis tubo corollæ cylindrico dimidio brevioribus; laciniis lanceolatis acutis erecto-patulis tubo multo brevioribus; filamentis filiformibus cum antheris ovatis brevioribus lacinias subæquantibus; squamis ovatis dentato-fimbriatis tubo multo brevioribus; ovario parvo globoso, stylis capillaribus longissimis demum exsertis; capsula corollæ basi hispidula indusiata calyptrataque circumscissa; seminibus globoso-triangulatis verruculosis.

Western Texas, Chs. Wright! 1849, nro. 522; prairies of the Leona, in the same region, the same! 1852, nro. 1639 in part (mixed with *C. umbellata*), in both instances on *Euphorbia albo-marginata.* — This is the only *Cuscuta* seen by me with (thus far) constantly 4-parted flowers. Flowers 2–$2\frac{1}{4}$ lines long, pedicels sometimes twice as long; calyx campanulate-globose, short in proportion, about $\frac{3}{4}$ line long, as well as the [490 (40)] base of the tube in all the specimens seen, papillose or, in the dry plant, scabrous; tube of the corolla slender, much longer than calyx; corolla enveloping the small capsule and contracted above it, capsule readily opening at base with a wide aperture; seeds 2–4, almost globose, 0.4 line long, with a very short hilum.

38. C. HYALINA, Roth! Nov. Spec. p. 100, not Wight, nor Boissier. *C. Arabica*, Wight, Ic. t. 1371, not Fresenius. *C. oxypetala*, Boissier! Diag. Or. II. 3, 130. *C. acutissima*, Buchinger! mss. in Pl. Schimper. — This well-marked species of the tropical parts of the East Indies (Heyne! Stocks! 478; Hooker & Thomson! and others), extending into Abyssinia (Schimper! 1522), is certainly the plant Roth had in view, as the specimens with Heyne's and with Roth's own labels in the Hb. of the Botanical Garden of St. Petersburg prove. Roth's description, however, cannot but have misled all future authors, as he speaks of scales, no trace of which is present in the different specimens I had occasion to examine, not even in Roth's own, nor are the flowers usually 4-parted, but almost always 5-parted.

Boissier, l. c., already mentions that the capsule bursts irregularly. Whether it more readily opens when fully ripe is unknown, but in all the specimens examined it rather adheres to the base in the calyx, and bursts only when some force is used, the deeply bilobed lower part of the dissepiment remaining with the base. It therefore very properly comes in at the end of this section, uniting it with the next.

With *C. Californica* this species is closely connected, and, indeed, is sometimes difficult to distinguish from it; but the texture of all the parts is thinner, semi-transparent, and shining, at least when dry; hence Roth's name is quite appropriate. The adnate parts of the filaments are distinct, but no trace of scales is visible; the ovary is conic; the styles are still more hair-like and on the capsule divaricate; the seeds usually ripen all four, — they are triangular, flattened, with the short, almost oblong hilum perpendicular or transverse, both forms being found in seeds from the same capsule.

SECT. 6. CLISTOGRAMMICA.

Styles of unequal length, cylindric, rarely almost absent; stigmata capitate. Capsule never opening at base, baccate, persistent with the calyx, or separating from it entire; intrastylar aperture often large, but generally not penetrating into the capsule. Seeds four in each capsule, or fewer, sometimes only one; rounded or usually triangular-flattened, often rostrate; hilum linear, short or longer, transverse or oblique or perpendicular.

Inflorescence variable; either an umbelliform or somewhat globose cluster with pedicelled flowers; [491 (41)] or a loose racemiform or paniculate cyme, finally more or less crowded; or (in the four last species) compact and often continuous clusters of closely sessile flowers with many sterile bracts. The corolla remains either at base or around the capsule or covers its top.

This section is the richest in species, and the most common in North and South America and on the Islands of the Pacific. One species (*C. obtusiflora*) is a cosmopolite, being found in North and South America, Oceanica, Asia, and Europe; and one (*C. appendiculata*) is peculiar to South Africa.

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§ 1. Platycarpæ.

...ed; ovary and capsule globose-depressed, with walls of thi...
...ple or compound subglobose cymes; styles usually short and thic...
...ish).

...ESK.—Humboldt's plant is the type of a series of forms sp...
...rous little species of the Peruvian Andes was not recognized...
...ibant parts of the globe; these, therefore, received distinct ...
...ountries. They all are characterized by the bright orange-...
...ally); the loosely globose inflorescence; the obtuse or roun...
...arly equal in length to the tube, and soon reflexed; the thick ...
...ary, which soon after flowering swells considerably, and, les...
...almost naked 4-seeled capsule, with a large intrastylar spe...
...ong, oval, oblique, with a long and narrowly linear p...
...e white umbilicus. All parts of the flower are often, and t...
...ly, difference I can discover between the diff...

Synopsis of the forms of C. obtusiflora...

...of the corolla: Var. vera, from So...
...ube of the corolla; all parts ...
...ndies and the southern parts of the United...
...ts usually short and thick; scales ...
...ular; scales ...

...a. *C. obtusiflora*, HBK.! N. Gen. Sp. III. ...
...ne! long; lobes of calyx very unequal, ...
...ish, but slightly fimbriate or crenate; capsule ...
...Andes of Peru, Humboldt! Guayaquil, ...
...ter style; Triana, Linden! 168; Anticquia ...
...corolla and rather larger, more deeply fi...
...ANICOLOR: calyx, corolla, and capsule ...
...ute as large as that in other specimens; ...
...ne long; capsule 1¼–1½ lines in diameter ...
...ida! Florida, Bugel! 400; Louisiana, ...
...ta Baker! Cuba, Purpig! under the ...
...ANTHOIDES: flowers larger, 1½ lines ...
...glabrous; lobes of calyx very un...
...early oval, almost orbicular; styles abou...
...seems to differ from *C. obtusiflora* by ...
...ong globose inflorescence, but it ca...
...glaze. The specimens are without ...
...ta! AUSTRALIS. *C. australis*, R. ...
...petal, scarcely more than 1 line ...
...ew lateral teeth; styles abou...
...Hook & Arn.! Bot. Beechy, 201. ...
...Island: Port Jackson, R. Brow...
...Baker's specimen is almost ...
...ed at the base of th...
...

Te. c. HEPTHLORA. *C. h...*
...ambica, Bonpland! In sol...

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91-100, apt. 8/86.

§ 1. Platycarpeæ.

Flowers pedicelled; sepals united; ovary and capsule globose-depressed, with walls of uniform thickness (in some forms of the last species conic).

* Flowers arranged in single or compound subglobose cymes; styles usually short and thick; withered corolla remaining at base of capsule.

39. C. OBTUSIFLORA, HBK. — Humboldt's plant is the type of a series of forms spread over a great part of the globe. The inconspicuous little species of the Peruvian Andes was not recognized nor sought for in the specimens found in widely distant parts of the globe; these, therefore, received distinct specific appellations, and different ones in different countries. They all are characterized by the bright orange-colored stems (which has suggested several specific names); the loosely globose inflorescence; the obtuse or rounded lobes of the calyx and the corolla, the laciniæ usually equal in length to the tube, and soon reflexed; the thick and at last subulate styles on the large and depressed ovary, which soon after flowering swells considerably, and, leaving the corolla at base, grows into a large, depressed, almost naked 4-seeded capsule, with a large intrastylar aperture of rhombic shape. Seeds 0.6 or 0.7 or even 0.8 line long, oval, oblique, with a long and narrowly linear perpendicular or transverse hilum running almost across the whole umbilicus. All parts of the flower are often, and the capsule commonly, glandulous-dotted. The principal, if not the only, difference I can discover between the different forms here united lies in the shape and size of the scales.

Synopsis of the forms of C. obtusiflora.

a. Scales ovate or spatulate.
- * Scales small, shorter than the tube of the corolla: Var. *vera*, from South America.
- ** Scales large, equalling or exceeding the tube of the corolla; all parts of the flower dotted with glands: Var. *glandulosa*, from the West Indies and the southern parts of the United States.
- *** Lobes of calyx and corolla broadly oval, or almost orbicular; scales large: Var. *latiloba*, from India. [492 (42)]

b. Scales bifid and often very small.
- * Flowers 5-parted, usually glandulous; scales very small, sometimes almost obliterated: Var. *australis*, from New Holland and China.
- ** Flowers often 4-parted, scarcely glandulous; scales as in the last: Var. *breviflora*, from southern Europe.
- *** Flowers and scales larger; lobes of calyx and corolla narrower: Var. *Cesatiana*, from Italy and Central Asia.
- **** Calyx large, cupulate, lobes somewhat carinate: Var. *Cordofana*, from Africa.

Var. *a.* VERA. *C. obtusiflora*, HBK.! N. Gen. Sp. III. 122. *C. inodora*, Willd.! Hb. nro. 3164. — Flowers scarcely more than 1 line long; lobes of calyx very unequal, as in many other forms of the species; scales spatulate, very small and thin, but slightly fimbriate or crenate; capsule $1\frac{1}{4}$–$1\frac{1}{2}$ lines in diameter, dotted with, in the dry state, dark red glands. — Andes of Peru, Humboldt! Guayaquil, Jameson! 542; New Grenada, Holton! 544, a specimen with more slender styles; Triana, Linden! 168; Antioquia on the Magdalena River, Jarvis! 1500. This last specimen, with a glandulous corolla and rather larger, more deeply fimbriate scales, forms a transition to the next.

Var. *β.* GLANDULOSA: calyx, corolla, and capsule dotted with red and shining glands; calyx shorter than tube in some and quite as large as that in other specimens; scales large, often exceeding the tube, deeply fringed, incurved; flower 1–$1\frac{1}{4}$ lines long; capsule $1\frac{1}{2}$–$1\frac{3}{4}$ lines in diameter. — Parasitic on *Polygonum* in most of the specimens examined; Georgia, Boykin! Florida, Rugel! 400; Louisiana, Tainturier! Western Texas, Wright! Bigelow! Schott! Bahama Islands, in Hb. Hooker! Cuba, Pœppig! under the name of *C. Americana*.

Var. *γ.*?. LATILOBA: flowers larger, $1\frac{1}{2}$ lines long, of a more fleshy or, when dry, coriaceous substance; calyx and capsule glandulous; lobes of calyx very unequal; these, the lobes of the corolla, and the large, deeply fringed scales broadly oval, almost orbicular; styles short, thick. — Martaban, Wallich! Cat. 1320[3] under the name of *C. sulcata*. — It seems to differ from *C. obtusiflora* by the more fleshy erect lobes of the corolla, and especially by the more paniculate than globose inflorescence, but it certainly cannot be united with *C. sulcata* (*Chinensis*), where Wallich and Choisy place it. The specimens are without fruit.

Var. *δ.* AUSTRALIS. *C. australis*, R. Brown! Prod. I. 491. — Flowers in this, as in all the forms enumerated above, 5-parted, scarcely more than 1 line long, dotted with glands all over; scales bifid or often reduced to one or a few lateral teeth; styles short, usually more slender than in the American forms. — *C. Millettii*, Hook. & Arn.! Bot. Beechy, 201, is the same plant, flowers rather less glandulous, styles stouter. — [493 (43)]
New Holland: Port Jackson, R. Brown! F. Bauer! Caley! Golbourn River, F. Mueller! Canton, China, Millett! — Mr. Mueller's specimen is almost destitute of glands and also of scales. Only here and there single or bifid teeth are noticed at the base of the filaments. I can distinguish it from the following form only by its 5-parted flowers.

Var. *ε.* BREVIFLORA. *C. breviflora*, Visiani! Fl. Dalm. II. 231. *C. Tinei*, Insenga! in Tin. Pl. Rar. Sic. p. 14. *C. aurantiaca*, Requien! in sched.; Bertol. Fl. It. VII. 623. *C. chrysocoma*, Welw.! in sched.; DesM. Et. 71.

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C. Rogovitschiana, Traut. Mel. Biol. II. $\frac{16}{28}$ Mart. 1855, ex descr. — Flowers 1–1½ lines long, usually 4-parted or 4- and 5-parted in the same specimen, only partially glandulous, or entirely destitute of glands; scales very small, bifid, or commonly consisting of small lateral teeth, or sometimes almost abortive. On the lower Wolga, Liemaschko! 227; Becker! Kiew, Trautvetter; Constantinople, Boissier! Greece, Zuccarini! Berger! Dalmatia, Stalio! Alexander! Naples, Gussone! Capua, abundant in fields of hemp, Bruni! Syracuse, Insenga! Corsica, Requien! Toulon, Quillon! Montferrand, Ramond! Portugal, Welwitsch! — It is often found in gardens on Basilicum, and is probably often propagated and transported with the seeds of that plant. The Basilicum with the parasite is called in the gardens about Naples "basilico con perrucche;" just as the old botanists used to call the grapes, to which *C. Epithymum* sometimes attaches itself, "uva barbata." — In France this form has often been named *C. Europæa;* and DesMoulins, Et. p. 67, etc., confounds it with *C. suaveolens.*

Var. ζ. CESATIANA. *C. Polygonorum*, Cesati! in Cat. Sem. Gen. 1849, p. 22, and Linnæa XXIV. 199, not Engelm. *C. Cesatiana*, Bert.! Fl. It. VII. 623. — Flowers 1½ lines long, 5-parted, without glands; lobes of corolla narrow, longer than the tube; scales usually exceeding the tube, deeply laciniate and more or less bifid. — Piedmont, on *Polygonum*, Cesati! Cashmere, Jacquemont! 876. — The strange fact, that exactly the same form should be found a native of so widely distant localities, furnishes but another instance of the cosmopolitan habits of this species. — Professor Cesati, l. c., gives the first correct account of the *apparent* intrastylar dehiscence of the capsule in the following words: "Capsula . . . ob dissepimenti exsiccationem . . . hians, . . . hinc capsulam apice dehiscentem *mentiens.*"

Var. η. CORDOFANA: calyx large, cupulate, longer than the tube of the corolla; its lobes united above the middle, somewhat carinate; scales as in var. *australis;* stamens and style shorter than in any other form of the species. — Fezogl, Cordofan, Figari! in Hb. Mus. Florent. [494 (44)]

40. C. CHLOROCARPA, Engelm.! in Gray Man. ed. 1, p. 350[1]; ed. 2, p. 337. *C. Polygonorum*, Engelm.! in Sill. Journ. XLIII. p. 342, t. 6, f. 26–29; DC. Prod. IX. 461, not Cesati. — Along ponds and wet places, mostly on different species of *Polygonum*, and also on other plants of these localities; St. Louis, Missouri, Drummond! Lindheimer! Engelmann! Illinois, Engelmann! Wisconsin, Lapham! Indian country west of Arkansas, Bigelow! eastward thus far only in Delaware, Tatnall! — Closely allied to the last species, especially to var. *breviflora;* the principal difference lies in the triangular, acute lobes of calyx and corolla. Flowers usually 4-parted, about 1 line long; scales small, bilobed, or oftener consisting of small lateral teeth, — in a specimen from Delaware they are very incomplete, or sometimes almost wanting; large ovary filling the shallow tube of the corolla; capsule comparatively large, thin, membranaceous, of a greenish yellow color, — whence the name, which I substituted for my former one, referring to the plants on which it is often found; this color of the capsule distinguishes it already at a distance from other species growing in the same region. Seeds 0.8 line long, oval, compressed, scarcely angled; transverse hilum rather shorter than in the last species.

41. C. ARVENSIS, Beyrich! in sched.; Engelm.! in Gray Man. ed. 2, p. 336. — The different varieties of this species are characterized by smaller flowers (often less than 1 line long) in more compound clusters, which approach in their form to those of the next species; lobes of calyx very obtuse; lobes of corolla almost always longer than the tube, acute or usually acuminate, reflexed and with the point inflexed; anthers broadly oval or rounded; scales large, deeply laciniate-fimbriate, often exceeding the tube; styles rather slender, as long as ovary or longer; seeds 0.5–0.7 line long, oval or rounded, compressed, with a rather short, linear, often oblique hilum. The differences in the shape, size, and texture of the calyx constitute the following varieties.

Var. α. PENTAGONA. *C. pentagona*, Engelm.! in Sill. Journ. XLIII. p. 340, t. 6, f. 22–24; DC. Prod. IX. 461. *C. arvensis*, Beyrich! in Hb. *C. globularis*, Nutt.! in Hb. — Calyx thin and shining; lobes orbicular, as long or longer than the shallow tube of the corolla, forming where they join five projecting angles. — Dry barren soil or old fields on different *Compositæ* or other plants, sometimes also on shrubs; from Virginia, Rugel! Sullivant and Gray! to the Carolinas, Schweinitz! Bosc! Beyrich! Curtis! Ravenel! and to Florida, Rugel! nro. 400, a. and b. [495 (45)]

The western form, with shorter lobes of the less distinctly angled calyx, was formerly distinguished by me as var. *microcalyx.* — In open woods, on dry soil, on *Solidago*, *Aster*, *Ceanothus*, etc., Illinois, Geyer! Missouri, Trécul! Riehl! Nebraska, Hayden! Indian country west of Arkansas, Bigelow! The latter has often as large a calyx as the eastern form.

Var. β. VERRUCOSA. *C. verrucosa*, Engelm.! l. c. p. 341, t. 6, f. 25; DC. Prod. IX. 461. — Calyx shorter than the campanulate tube, fleshy and glandular-verrucose. — On dry prairies, often on *Petalostemon*, but also on other prairie plants: Texas, Drummond! III. 247; Lindheimer! 127; Northern Mexico, Berlandier! 2457, to San Luis

[1] The original descriptions of species characterized by Dr. Engelmann in the Manual, etc., will be found in the collected descriptions at end of *Cuscuta* matter. — EDS.

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Potosi, the same! and Parras, Gregg!
mixed with a few specimens of the
Var. γ. PUBESCENS: pedic
Western Texas, Lindheimer! V
this and the last variety, ha
Var. δ. CALYCINA:
lobes rounded or oval,
often not longer than
664; Wright! bot
Herb. Fauché!
Geyer! 674.
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Potosi, the same! and Parras, Gregg! — Lindheimer's nro. 473 is an intermediate form between this and var. *pentagona*, mixed with a few specimens of the following.

Var. γ. PUBESCENS: pedicels and all parts of the flower or only the ovary and the capsule papillose-pubescent. — Western Texas, Lindheimer! Wright! 1635 (574). — Wright's 519 and 523 (coll. 1849) are a transition form between this and the last variety, having the calyx of *verrucosa* and the ovary and capsule of *pubescens*.

Var. δ. CALYCINA: inflorescence often more compact; flowers rather larger; hemispherical calyx not angled, lobes rounded or oval, usually longer than the tube; lobes of corolla broader and shorter than in the other forms, and often not longer than the tube. — Texas, Lindheimer! 126 (a form from wet prairies, with smaller flowers); the same! 664; Wright! both on *Dianthera*, in or along water-courses; Martinique, Mad. Richard! 114 in Herb. Mus. Flor.; Herb. Fauché! (now in Hb. Boissier); Saskatchawan, Drummond! *C. Americana?* Hook. Fl. N. A.; Oregon, Geyer! 674.

Specimens from Brazil Eschscholtz! in Hb. Ledebour; Gardner! 6068 in part (*C. decora* has also been distributed under this number) differ somewhat from this variety by stouter and, in fruit, subulate styles; Gardner's specimens have also a smaller calyx.

* * Flowers arranged in loose compound cymes; styles usually slender, as long or longer than ovary; withered corolla remaining at base of capsule or enveloping it.

42. C. TRICHOSTYLA, n. sp.: caule filiformi; bracteis ovatis obtusis; floribus breviter pedicellatis in cymulas ramosas subglobosas congestis; calycis cupulati fere ad basin divisi lobis ovatis orbiculatisve obtusis basi imbricatis tubum corollæ campanulatum æquantibus seu superantibus; laciniis ovatis obtusis tubo æquilongis demum patulis reflexisve; antheris ovatis filamenta subulata brevia æquantibus; squamis late ovatis fimbriatis incurvis; stylis capillaribus ovario depresso multo longioribus e tubo vix exsertis. [496 (46)]

Panama, Tweedie! Santarem, Brazil, on *Hyptis*, Spruce! 854, both in Hb. Hooker. — None of the specimens examined being in fruit, the true position of this species must remain doubtful. The large imbricate calyx, the slender styles, and especially the branching inflorescence, distinguish it from *C. obtusiflora;* the inflorescence, the shape of the ovary and of the styles, from *C. Gronovii* and *C. racemosa.* — Flowers 1¾–2 lines long, "white, with a strong odor of hawthorn," Spruce; exterior lobes of the calyx in the Panama specimen towards the tip verrucose-cristate; in the other smooth, thin, and shining; scales in the former longer than the tube, in the other broader and shorter.

43. C. GYMNOCARPA, n. sp.: caule filiformi; floribus breviter pedicellatis umbellato-glomeratis; calycis lobis ovatis seu orbiculatis obtusissimis nitidis tubum corollæ æquantibus; laciniis triangulatis acutis erectis seu demum patentibus tubo æquilongis; antheris ovato-orbiculatis filamentum breve subulatum æquantibus; squamis tenuissimis late ovatis fimbriatis faucem attingentibus; stylis capillaribus ovarium depressum æquantibus supra capsulam globoso-depressam e corolla ad basin marcescente longe exsertam divaricatis patentibus recurvisve; seminibus oblique ovatis tumidis tenuissime sub lente reticulatis. — *C. Sandwicensis*, var. *Mimosæ*, Hook. fil. in Linn. Trans. XX. 205.

James Island, of the Galapagos group, in immense abundance on *Mimosa* bushes, Chs. Darwin! in Hb. Hooker. — Flowers about 1 line long, of a very thin texture; capsule 1¼–1½ lines in diameter, with a very small intrastylar aperture; seeds, in the only specimen extant, light yellowish brown, 0.6 line long, plump, nearly smooth, with a short, oblong-linear, usually perpendicular, hilum. — Much closer to *C. arvensis* than to *C. Sandwichiana;* distinguished from both by the short, broad, and very acute lobes of the corolla, and by the very slender, at last nearly horizontal, styles; from the latter also by the presence of scales and by the naked capsule.

44. C. SANDWICHIANA, Choisy! Cusc. 184, t. 5, f. 4; DC. Prod. IX. 458. — Sandwich Islands; apparently the only species growing there; mostly on shrubs; Menzies! Eschscholtz! Gaudichaud! Matthews! Stewart! Maximowitsch! 57; Remy! 424. — Inflorescence a compound loosely-flowered cyme; flowers pedicelled, 1–1½ lines long, "pallide ochracei" Maxim., of thin, membranaceous texture; only in Menzies' specimen in Hb. Banks I find all the parts of the flower dotted with glands; lobes of calyx ovate, acutish; lobes of corolla acute and inflexed at tip or sometimes obtusish, often reflexed, but at last commonly adpressed to the top of the capsule, which for its greater part is enveloped by the tube; anthers oval; no trace of scales; capsule 1¾–2 lines in diameter, with a small, almost circular, intrastylar aperture; styles stouter than in the last species, somewhat divaricate on capsule; seeds unusually large, 0.8–1.0 line long, verrucose-reticulate, triangular-ovate, somewhat oblique but not rostrate, with a short linear-oblong perpendicular hilum on the comparatively small regularly circular umbilicus. [497 (47)]

45. C. ACUTA, n. sp.: caulibus subcapillaceis; cymis compositis laxifloris umbellulas mentientibus; pedicellis flore brevioribus bracteis ovatis acutis suffultis; calycis late campanulati membranacei lobis triangulatis acutis seu cuspidatis tubum corollæ campanulatum superantibus; laciniis lanceolatis acutatis tubo longioribus erectis seu subpatentibus; antheris oblongo-linearibus filamento subulato fere brevioribus; squamis ovato-spatulatis longe adnatis

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capsula tenuissima corollae
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faucem attingentibus versus apicem crispato-fimbriatis; stylis capillaceis ovarium obovatum seu globosum æquantibus; capsula tenuissima corollæ rudimentis ad basin persistentibus indusiata apice libera stylis e basi lata subulatis paulo divergentibus coronata; seminibus 2–4 lenticularibus rugoso-reticulatis.

Chatham Island, of the Galapagos group; mostly on *Leguminosæ*, common on a low annual *Crotalaria*, but also on trees, such as *Parkinsonia* and *Mimosæ*, hanging down in massy festoons, Andersson! — Closely allied with both other Pacific species just described, distinguished from them by the very acute lobes of calyx and corolla and by the subulate styles; moreover from *C. Sandwichiana* by the presence of scales, and from *C. gymnocarpa* by the covered capsule and the direction of the styles; from *C. acutiloba* of the mountains of the neighboring coast and from *C. umbellata* it differs by the inflorescence, by the baccate capsule, etc. — Flowers 1–1¼ lines long; scales adnate nearly to the apex, crenulate on the sides, fringed only at tip; capsule about 1 line in diameter; intrastylar aperture large, forming a transverse slit; seeds only 0.5 line long, dark brown in the specimen before me (perhaps not perfectly ripe); and strongly reticulate; hilum short, oblong-linear, perpendicular or oblique. — The specimens examined by me were all on a low Crotalaria.

*** Flowers arranged in branching paniculate cymes; styles slender, as long or longer than ovary; withered corolla surrounding the capsule or covering its top.

46. C. TENUIFLORA, Engelm.! in Gray, Man. ed. 1, p. 350; ed. 2, p. 336. *C. Cephalanthi*, Engelm.! [498 (48)] in Sill. Journ. XLIII. 336, t. 6, f. 1–6. — Wet places, often on *Cephalanthus*, *Salix*, *Cornus*, and other shrubs, but also on *Vernonia*, *Aster*, and other herbaceous plants; Missouri and Illinois, Engelmann! Geyer! Upper Missouri country, Hayden! New Mexico, Wright! 1629 (124); Arizona, the same! 1626 (578). — In young plants just beginning to flower the cymose-paniculate inflorescence is very distinct, — the terminal flowers of the main branches of the inflorescence opening first, and lateral clusters of smaller and ever smaller buds appearing lower down on the peduncles; a little later the fruits occupy the ends of the branches, while more and more flowers and buds are developed on lateral peduncles and pedicels, till at length the whole becomes one large and intricate, and often quite compact, cluster. Short pedicels, gradually swelling into the base of the turbinate calyx; flowers ordinarily 1 line or less in length, mostly 4-parted, later flowers often only 3-parted; tube of the corolla slender, much longer than the calyx, and larger than the short ovate obtuse laciniæ; scales ovate or spatulate, shorter than the tube; capillary styles as long as the depressed ovary; capsule globose, 1–1¼ lines in diameter, bearing the withered corolla on top, often with only one or two seeds; seeds 0.6–0.7 line long, oval, oblique, carinate on the inside, with a short linear-oblong usually perpendicular hilum. — The western forms collected by Mr. Wright differ from those of the Missouri and Mississippi valleys only by having larger flowers (1.2–1.4 lines long), larger, more depressed, mostly 4-seeded capsules (1½–2 lines in diameter) and larger (0.8 line long) flatter seeds.

Choisy, in DC. Prod. IX. 458, wrongly gives this very distinct species as a synonym of *C. compacta*, with which it has scarcely anything in common but the hooded capsule; from small flowered forms of *C. Gronovii* it differs by the position of the dead corolla and by the structure of the ovary and capsule.

47. C. CALIFORNICA, Choisy! Cusc. 183; DC. Prod. IX. 457; Hook. & Arn.! Bot. Beechy, 364. — Both authors described this plant from Douglas's specimens under the same name and in the same year (1841); Nuttall, in the Hb. Acad. Philad., had named it *C. acuminata*. — Flowers on slender pedicels, loosely paniculate; calyx small, turbinate with acute triangular, lanceolate or acuminate and sometimes recurved lobes; laciniæ very slender, lanceolate-linear, acute or acuminate, erect or spreading, in fruit mostly erect or connivent; scales wanting, or indicated by a membranaceous inverted arch, with a smooth or crenulate margin connecting the adnate parts of the filaments near the base of the corolla, — in a doubtful variety the scales are fully developed; styles capillary; [499 (49)] ovary small, usually globose; capsule enveloped by the corolla; seeds often solitary, subglobose, slightly compressed, strongly hooked, 0.5–0.6 line long.

The different specimens examined vary considerably in the shape and length of the calyx, the proportion of the laciniæ to the tube, the length of the filaments, the indication of scales, the length of the styles, and even the shape of the ovary.

Var. *α*. BREVIFLORA: flowers scarcely more than 1 line long, on short pedicels; laciniæ rather longer than tube; anthers, filaments, and styles short; seeds several. — Monterey in fields, Hartweg! 1863.

Var. *β*. GRACILIFLORA: flowers slender, 1½–2½ lines long; calyx often shorter than tube of corolla; laciniæ as long as the tube, very narrow; filaments often short, or as long or longer than the linear-oblong anthers, styles as long or much longer than ovary. — California, Douglas! Fremont! 506; Bigelow!

Var. *γ*. LONGILOBA: flowers 2–2½ lines long; calyx usually equal to the tube, rarely shorter, sometimes longer; laciniæ slender, sometimes twice the length of the tube; subulate filaments as long or longer than the oblong-linear anthers; styles very long and slender. — California, principally, as it appears, on the coast of the southern parts of the State, and commonly on some species of *Eriogonum:* Sta. Barbara, Nuttall! San Diego, Thurber! 570 & 633; Newberry!

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Var. δ. APICULATA : corolla somewhat granulate, ovary and 1-seeded capsule conic, apiculate ; otherwise very similar to the last. — On the Colorado, Bigelow ! in February.

Var. ε. ? SQUAMIGERA : flowers 2–2½ lines long, on pedicels shorter than the flower, or even the calyx, in rather crowded subglobose clusters ; lobes of calyx lanceolate, acuminate, as long as the open, funnel-shaped tube of the corolla ; laciniæ lanceolate, as long as the tube, at last spreading ; anthers oblong-linear, cordate at base, on very short filaments ; scales spatulate, fringed, shorter than the tube, incurved ; styles as long as the very acute ovarium ; capsule apiculate, 1-seeded, lower half enveloped by the tube of the corolla. — The more densely clustered flowers, the presence of scales and the acute ovarium would seem to specifically distinguish this form, but the last mentioned variety appears to unite it with the common form ; perhaps it ought to be classed with the next species. — Saline soil on the Rio Virgen, Utah, on *Sueda*, J. Remy ! in Hb. Mus. Paris.

§ 2. Oxycarpeæ.

Flowers subsessile, or pedicelled ; sepals united ; ovary and capsule thickened towards the apex, usually more or less conic.

* Flowers subsessile, crowded in rather dense, small or large and compound glomerules ; withered [500 (50)] corolla enveloping or covering the 1–2-seeded capsule.

48. C. SUBINCLUSA, Durand & Hilgard ! in Journ. Ac. Phil. III. p. 42, and in Pacif. R. R. Rep. V. 3, p. 11. — This fine and large-flowered species resembles different forms of *C. corymbosa* and *C. odontolepis* so much, that I felt considerably inclined to unite all of them as varieties of one and the same species ; but then the dehiscence or non-dehiscence of the capsule would have to be considered as a character of not even specific importance ; there are, however, also other differences, so that these species must be viewed as representing different types under a similar external form. — Flowers 2–3 lines long, on very short pedicels or almost sessile, paniculate-glomerate, at last forming large and rather dense clusters ; cylindrical tube of corolla longer than the deeply divided calyx ; lobes fleshy, ovate-lanceolate, acutish, imbricate ; laciniæ ovate, acute, more or less crenulate, shorter than the tube, erect or patulous ; anthers oblong or ovate, cordate, usually longer than the filaments, or even subsessile ; scales scarcely reaching above the middle of the tube, spatulate-oblong, deeply fringed ; styles slender, much longer than the 2-pointed ovary, at first scarcely exsert ; capsule oval, 1–2-seeded, its upper part capped by the withered corolla ; seeds 0.7–0.9 line in diameter, rough, oval or subglobose, oblique or almost hooked, with a very small oblong hilum.

On the Tejon Pass in the southern part of California, on *Salix* and *Artemisia*, Heermann ! in the same region on *Cratægus*, Le Conte ! Sierra Nevada, above Placerville, Remy ! Saline marshes on Mare Island, Bay of San Francisco, on *Grindelia*, Wright ! — It is remarkable, but in this genus not unusual, that specimens from the high mountains are absolutely identical with those from the salt marshes of the coast ; the only difference I can discover consists in the flower being a little larger, the filaments longer and the anthers shorter.

Var. β. ABBREVIATA : lobes of calyx more membranaceous, less deeply divided, scarcely imbricate, rather longer than the short funnel-shaped tube of the corolla ; laciniæ as long as tube ; styles as long as the conic ovary, shorter than the oval capsule which is entirely enveloped by the corolla. — Mare Island in San Francisco Bay, on *Arthrocnemon*, Wright !

49. C. MICRANTHA, Choisy ! Cusc. 175, t. 1, f. 3 ; DC. Prod. IX. 453 ; Gay ! Fl. Chil. IV. 446. — A small-flowered and low species, perhaps the lowest one in South America, peculiar to Chili : Coquimbo, on the shore of the Ocean, always on *Frankenia*, Cl. Gay ! 538 ; Concon, on *Plantago*, *Trifolium*, etc., Pœppig ! 89 under the name of *C. Popayanensis ;* St. Jago, Dr. Philippi ! Besser ! — Flowers about one line long on short pedicels [501 (51)] or almost sessile, in small compact clusters ; lobes of calyx and corolla broadly triangular, acute, the latter often somewhat crenulate ; scales usually small, ovate or spatulate, attached to the middle of the tube and scarcely reaching to the throat ; styles capillary, usually much shorter than the conic ovary ; stigmas rather small but very distinctly capitate, so that it is difficult to understand how Choisy could place this species among those with filiform stigmas ; even his own figure, though not quite correct, does not bear him out. — Capsule oval, 1-seeded, enveloped in the corolla, with top naked ; seed 0.6 line long, compressed obovate, rostrate, rough, with a very small hilum reduced to almost a point. This is Choisy's original plant, from Coquimbo ; all the other specimens cited above belong to

Var. β. LATIFLORA : flowers rather larger, 1¼–1½ lines long, petals spreading, scales often larger, styles longer ; fruit not seen. Some of Pœppig's plants approach the original specimens by their small flowers and crenulate laciniæ.

* * Flowers pedicelled, disposed in rather loose paniculate cymes, which often at last become crowded ; withered corolla usually enveloping the capsule or covering its top, in the three last species investing only its base.

† Lobes of corolla acute or rarely obtuse, inflexed or corniculate at the apex.

50. C. DECORA, Choisy, under the name of *indecora*. Choisy saw only a very poor blackened specimen, such as Berlandier was in the habit of making, of the small-flowered variety ; but it so happens that this is one of the prettiest species,

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so much so, that Scheele has named it *pulcherrima;* I therefore feel justified in the liberty I take with Choisy's name in lopping off its negative *in.* — This is a wide-spread and quite variable species, extending from the United States to Brazil, always readily recognized by the structure of the fleshy white flowers, which consist of large convex cells, which make the surface appear rough and the margin crenulate; these cells are on the surface sometimes elongated into oval or cylindric papillæ; inflorescence loosely paniculate or in some forms at last more compact; lobes of calyx ovate or lanceolate, acute, of different lengths; laciniæ ovate-lanceolate, inflexed at the acute point, erect or spreading, not recurved; scales large, broadly oval; styles usually stout and very unequal, about as long as the conic ovary; capsule enveloped by the corolla; seeds usually several, 0.6–0.9 line long, obliquely ovate, rostrate, rough, with a very short, oblong, transverse hilum. The following varieties may be distinguished: —

Var. *α.* INDECORA. *C. indecora*, Choisy! Cusc. 182, t. 3, f. 3; DC. Prod. IX. 457. *C. neuropetala*, *β.* [502 (52)] *minor*, Engelm.! in Boston Journ. N. Hist. V. 223: flowers 1–1¼ lines long, on long pedicels, loosely panicled, with very short calyx. — On the Rio Grande, Berlandier! 865 & 2285; Texas, Lindheimer! 123, (in some of the distributed collections the numbers 123 and 124, both forms of this species, are transposed). — A papillose-hispid form of this variety is *C. verrucosa, α. hispidula* Engelm.! Sill. Journ. XLIII. p. 341. *C. hispidula*, Engelm.! ib. 45, p. 75; DC. Prod. IX. 461; Texas, Berlandier! 956 & 2386; Drummond! 248; Lindheimer! 474; Wright! Some of these specimens by their larger flowers approach the next form.

Var. *β.* PULCHERRIMA. *C. neuropetala*, Engelm.! l. c. 45, p. 75; DC. Prod. IX. 461. *C. pulcherrima*, Scheele! in Linnæa, 21, p. 750: smooth or rarely slightly papillose; inflorescence loose or sometimes more compact; flowers variable in size, 1¼–1¾ lines long, usually broadly campanulate; calyx as long or longer than tube; styles usually as long as ovary, rarely much longer; anthers and stigmas yellow or often purple. A form with very large and broad flowers is *C. neuropetala, γ. littoralis*, Engelm. Boston Journ. l. c. — On wet and dry prairies, from the sea-coast to the mountains, on different shrubs, also on herbaceous *Compositæ*, *Leguminosæ*, etc.: south-western Illinois, Engelmann! Indian country west of Arkansas, Fremont! 2d Exp. 485; Bigelow! Texas, Lindheimer! 124 (a very large-flowered form) 474, 475; and westward, Wright! coll. 1849, nros. 520, 521, 524, 525; coll. 1851–'52, nros. 1630, 1633, 1634, 1637, 1638; Sonora, Wright! 1622; Northern Mexico, Gregg! 78 and 888; Florida, Chapman! St. Marks, Rugel! 1000 & 1001; Cuba, Hb. Vind.! Jamaica, McFaddin! Bancroft! a small-flowered, short-styled form; Cumming! 95; Alexander! Brazil, Salzmann! in Hb. Buchinger; Gardner! 5036, a form with very long styles, and 6068 in part (*C. arvensis* var. has been distributed under the same number).

Var. *γ.* SUBNUDA: lower half of capsule enveloped by the tough remains of the corolla, upper part naked; short styles divaricate. — "Common on the overflowed islands of the Parana," Brazil, Tweedie! in Hb. Hooker.

Var. *δ.* INTEGRIUSCULA: calyx shorter than the deeply campanulate tube of the corolla; laciniæ erect; scales triangular, acutish, thin, almost entire; styles capillary, shorter than ovary. — Mendoza, on *Ephedra*, Gillies!

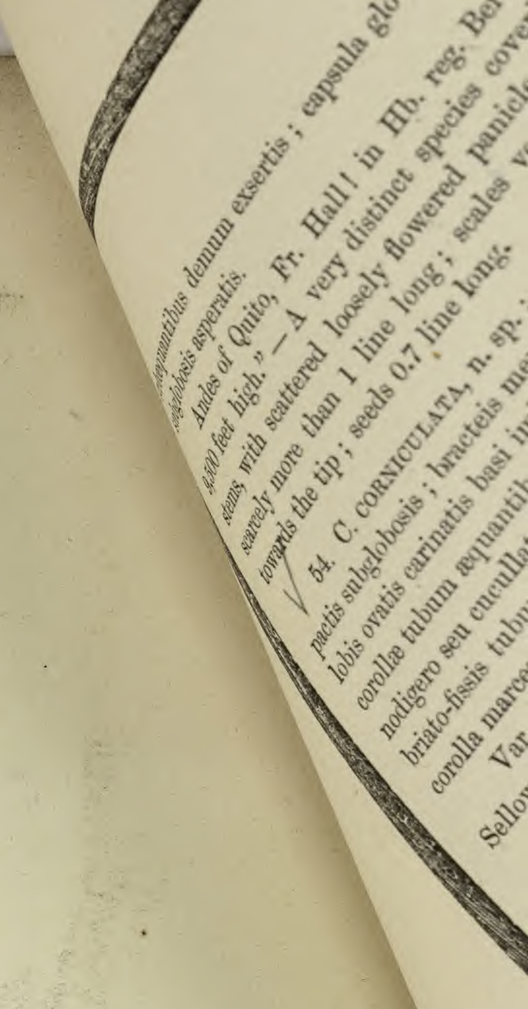
51. C. INFLEXA. *C. Coryli*, Engelm.! in Sill. Journ. XLIII. p. 337. *C. umbrosa*, Beyrich! in Hb. reg. Berol. in part, not Hooker; Engelm.! in Gray, Man. ed. 1, 351; ed. 2, 336. *C. parviflora*, Nutt.! in Hb. *C. congesta*, Beyr.! in Hb. *C. compacta*, var. *crenulata*, Choisy in DC. Prod. IX. 459. — In open woods or dry prairies, [503 (53)] usually on shrubs, *Corylus*, *Ceanothus*, *Symphoricarpus*, *Rhus*, *Salix* and even on *Carya*, but also on *Helianthus*, *Solidago* and other Compositæ, etc. Virginia, Beyrich! Gray & Sullivant! Georgia, Beyrich! Illinois and Missouri, Engelmann! Riehl! Kansas, Fendler! 658; region west of Arkansas, Bigelow! on the Upper Missouri and Yellowstone Rivers, Hayden! — Flowers 1 line long, of similar structure to the last; distinguished by the deeper subcylindric, mostly 4-parted corolla, which at last covers only the top of the capsule, the erect, inflexed laciniæ and the minute scales, reduced to lateral teeth; styles of different lengths, divaricate on capsule; seeds ovate, oblique, thick, 0.6–0.7 line long, with a small, oblong, oblique or transverse hilum.

52. C. APPENDICULATA, n. sp.: caulibus capillaceis; cymis fasciculato-paniculatis laxifloris; calycis brevissimi basi glanduloso-appendiculati lobis ovatis acutis tubum profunde campanulatum vel subcylindricum dimidium vix æquantibus; laciniis ovato-lanceolatis demum reflexis apice acuto incurvis tubo æquilongis; antheris ovato-orbiculatis cordatis filamento longioribus; squamis obovatis crispato-fimbriatis faucem æquantibus incurvis; stylis tenuibus ovario acuto subæqualibus; capsula globosa apiculata sub-1-sperma exserta supra medium nuda, foramine intrastylari magno; seminibus ovato-subglobosis obliquis.

Cape of Good Hope, on *Erica* and other shrubs: Zwellendam, "on dry hills throughout the whole district," Kraus! nro. 1816, under the name of *C. Africana;* Teufelsberg, in Hb. Fischer! now Hb. H. B. Petropol. — The only South African species belonging to this section; distinguished by the very small (scarcely ¼ line long) appendiculate calyx, etc.; flowers 1–1¼ lines long; seeds 0.6 line long.

53. C. STENOLEPIS, n. sp.: caulibus capillaceis; cymis paniculatis laxis paucifloris; pedicellis elongatis bractea ovata suffultis; calycis turbinati glandulosi lobis ovatis obtusis tubo corollæ subcylindrico brevioribus; laciniis tubo brevioribus lanceolatis reflexis apice acutiusculo incurvis; staminibus brevissimis, anthera ovata filamento subulato æquilonga; squamis angustissimis parce fimbriatis faucem vix attingentibus incurvis; stylis ovarium conicum bicuspe

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subæquantibus demum exsertis ; capsula globosa apiculata sub-1-sperma apice corolla calyptræformi tecta ; seminibus subglobosis asperatis.

Andes of Quito, Fr. Hall! in Hb. reg. Berol. ; J. P. Couthouy ! on a *Dalea* "on the banks of the Machange, 9,500 feet high." — A very distinct species covering low shrubs with intricate masses of their hair-like stems, with scattered loosely flowered panicles ; whole plant filled with a reddish-yellow juice ; flowers [504 (54)] scarcely more than 1 line long ; scales very narrow, linear, irregularly and sparsely laciniate-fimbriate towards the tip ; seeds 0.7 line long.

54. C. CORNICULATA, n. sp. : caulibus filiformibus crassiusculis ; cymis bracteosis laxis paniculatis seu magis compactis subglobosis ; bracteis membranaceis ovatis obtusis ; floribus pedicellatis ; calycis campanulati ultra medium fissi lobis ovatis carinatis basi imbricatis obtusis seu cuspide nodoso-incrassato obtusato apiculatis subinde patulis recurvisve corollæ tubum æquantibus seu superantibus ; laciniis tubo æquilongis ovato-lanceolatis demum patulis reflexisve apice nodigero seu cucullato corniculatis inflexis ; antheris oblongis filamenta subulata æquantibus ; squamis late ovatis fimbriato-fissis tubum excedentibus incurvis ; stylis ovarium pyriforme æquantibus, stigmatibus magnis pileatis ; capsula corolla marcescente indusiata apice nuda, orificio intrastylari magno ; seminibus oblique ovatis intus carinatis.

Var. *α.* RACEMULOSA : floribus laxe paniculato-cymosis ; calycis lobis apice nodoso acutiusculis. — Southern Brazil, Sellow! 2489 and 3621 in Hb. reg. Berol.

Var. *β.* SPHÆROCYMA : floribus globoso-cymosis ; calycis lobis acutiusculis seu obtusis. — Brazil, Prov. Goyaz, on the campos near the Buixas, Weddell! Venezuela, on the Rio Meta, Karsten!

This is the first of a series of intricate, mostly Brazilian species, which includes nros. 54–58, and which will not be entirely cleared up until carefully studied in their native homes. The inflexed-pointed laciniæ and the naked capsule with the large intrastylar orifice seem to distinguish it sufficiently from *C. racemosa*. Whether both forms described above, which seem to differ so materially in their inflorescence, really do belong together, must be decided after a fuller study of this whole group ; Weddell's specimen seems to connect them. — Flowers 1–1¾ lines long ; cymes of one 5–8 lines, glomerules of the other 4–5 lines in diameter ; seeds of the largest-flowered specimen 0.6–0.7 line long, obliquely ovate, with a very short linear-oblong transverse hilum.

55. C. RACEMOSA, Martius ; spread in several forms over a great part of South America, just like *C. Gronovii* over North America, and *C. planiflora* over Asia and the Mediterranean regions ; it has been introduced with agricultural seeds into Europe, where it has given rise to many discussions, and has, to some extent, stimulated botanists to a further examination of this genus. — All the forms of this species are characterized by the loose racemose-paniculate inflorescence ; calyx usually shorter than the deeply campanulate gradually widening tube ; [505 (55)] laciniæ commonly short, spreading or reflexed with inflexed points ; scales large ; ovarium ovate or obovate, the upper part being compact ; styles stout with large, depressed, almost peltate stigmas ; capsule commonly enveloped by the corolla, with 2–4 light-brown, oval, obliquely truncate or rostrate seeds, 0.6–0.7 line in length ; hilum short, linear, perpendicular or transverse, often with radiating lines on the umbilicus. I distinguish the following forms : —

Var. *α.* BRASILIANA. *C. racemosa*, Martius ! Itin. I. 286 ; Choisy! Cusc. 181, t. 3, f. 1 ; DC. Prod. IX. 456 : flowers with few or scarcely any glands, of a rather membranaceous texture and pale color, with very short and obtuse lobes of calyx and obtusish lobes of corolla ; flowers usually 1½ lines long. — Common about Rio and generally in Brazil, on shrubs and herbaceous plants; Martius ! 941 ; Booz ! Gaudichaud ! Graham ! Pohl ! 5,100, in part; Riedel, 695.

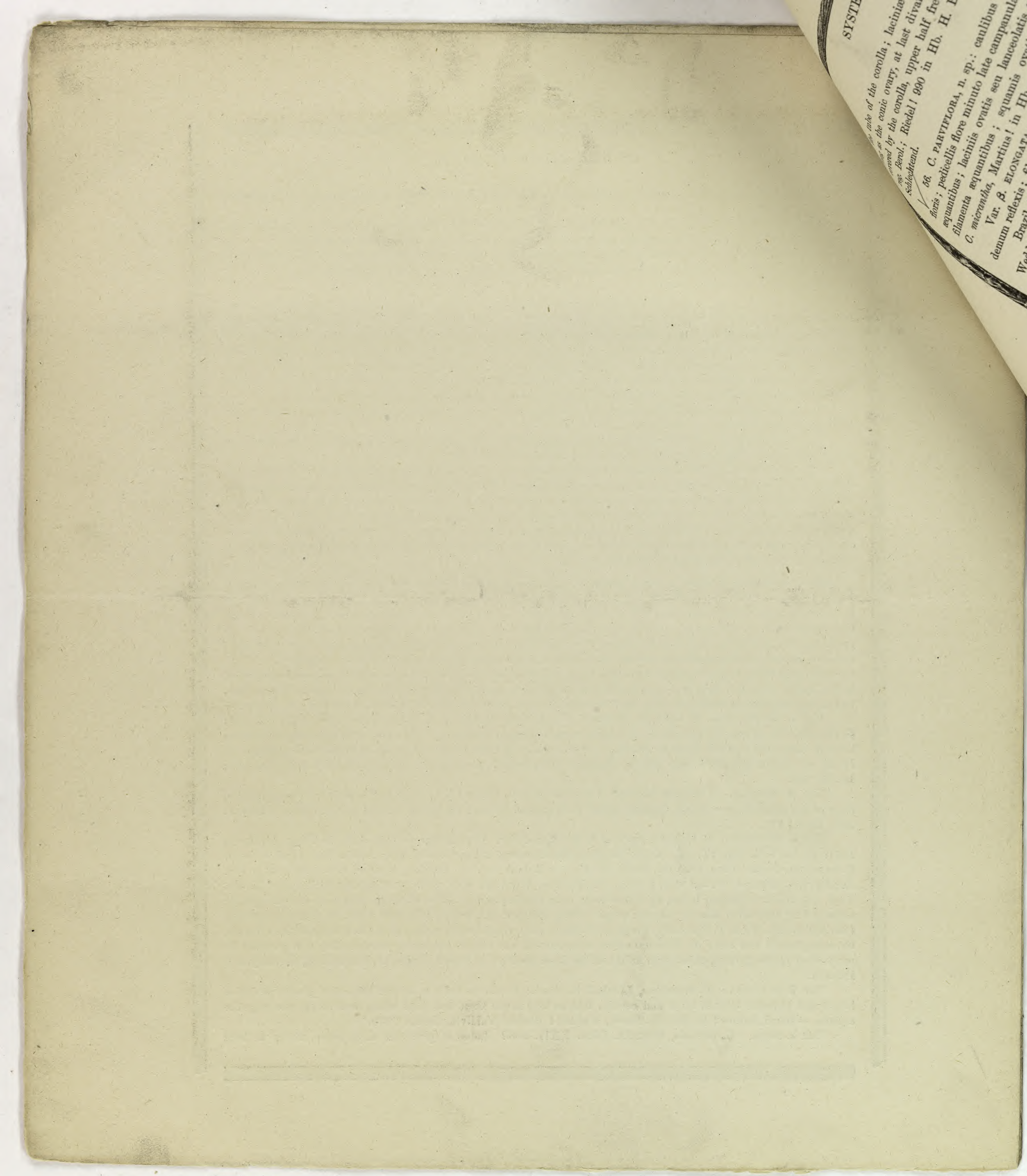
Var. *β.* MINIATA. *C. miniata*, Martius! l. c. ; var. *minuta*, Choisy! l. c.: flowers of a thicker texture, reddish, more or less glandulous. — Brazil, Martius! 1292 ; Ackermann! Mikan ! Langsdorff ! Pohl! 5,100 in part ; Vauthier! 252 ; Lund ! 737.

Var. *γ.* CHILIANA. *C. Chilensis*, Bertero! in sched., not Ker. *C. suaveolens*, Seringe, Ann. Sc. Phys. Nat. Lyon, 1840; Cl. Gay! Fl. Chil. IV. 448 ; DesM. Et. 66 (under *Cassutha*, and confounded with *C. obtusiflora*, var. *breviflora*). *C. corymbosa*, Choisy! Cusc. 180 ; DC. Prod. IX. 456, not Ruiz & Pav. *C. Hassiaca*, Pfeiffer! Bot. Zeit. 1843, p. 705. *Engelmannia migrans*, Pf. ib. 1845, p. 674. *C. diaphana*, Wend. Fl. Hass. 364. *C. Popayanensis*, Pœppig! in Hb. Vind. not HBK. — Flowers larger, 1½–2 lines long, more membranaceous ; lobes of corolla with acute inflexed points ; scales as long as or often shorter than the tube. — Chili, Bertero ! 205 in Hb. DC., 940 & 201 in Hb. Shuttleworth (nro. 940 in Hb. DC. is *C. Chilensis*); Pœppig ! Cl. Gay! 449 ; about twenty years ago it was introduced into Europe, but is apparently now lost ; on *Medicago sativa*, sometimes in wet seasons destroying whole fields ; also parasitic on many other plants growing about such fields ; it has been observed in France, Piedmont, Switzerland, Germany, and Holland.

Var. *δ.* CALYCINA. *C. suaveolens*, Lechler ! in sched.: flowers as large as in the last, often glandulous, with longer and obtusish lobes of calyx and corolla, both as long as the short and wide tube ; dead corolla covering the capsule. — Brazil, Sellow ! in Hb. reg. Berol., Weddell ! Riedel ! Valdivia, Lechler ! 479.

Var. *ε.* NUDA. *C. citricola*, Schlecht. Linn. XXII. 808? Lobes of glandular calyx ovate, nearly as long

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SYSTE

...ube of the corolla; lacinie...
...as the conic ovary; at last diva...
...vered by the corolla, upper half fre...
...Berol.; Riedel! 990 in Hb. H. B...
...schlechtend.

56. C. PARVIFLORA, n. sp.: caulibus ...
floris; pedicellis flore minuto late campanul...
æquantibus; laciniis ovatis seu lanceolatis p...
filamenta æquantibus; squamis ovatis ...
C. micrantha, Martius! in Hb., not Cho...
Var. β. ELONGATA: pedicellis ...
demum reflexis; filamentis ...
Brazil, Minas Ger...
Weddell! 2125. ...
smallest f...
un...

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as the tube of the corolla; laciniæ of same length, reflexed, at the obtusish apex inflexed; styles as [506 (56)] long as the conic ovary, at last divaricate; lower part of the depressed somewhat glandulous capsule covered by the corolla, upper half free. — Brazil, near Rio, Sellow! 4.99 B.; southern Brazil, the same! in Hb. reg. Berol.; Riedel! 990 in Hb. H. B. Petrop.; Island of Sta. Catarina, southern Brazil, on *Citrus*, Pabst ex Schlechtend.

56. C. PARVIFLORA, n. sp.: caulibus capillaceo-filiformibus intricatis; cymis fasciculato-paniculatis laxis pauci-floris; pedicellis flore minuto late campanulato longioribus; calycis turbinati lobis ovatis obtusiusculis tubum corollæ æquantibus; laciniis ovatis seu lanceolatis patulis apice obtusiusculo inflexis; staminibus brevibus, antheris ovatis filamenta æquantibus; squamis ovatis laciniato-fimbriatis conniventibus; stylis ovario obovato æquilongis. — *C. micrantha*, Martius! in Hb., not Choisy.

Var. β. ELONGATA: pedicellis elongatis clavatis; floribus minoribus; laciniis acutis tubo subduplo longioribus demum reflexis; filamentis subulatis gracilibus lacinias æquantibus.

Brazil, Minas Geraes, on *Trembleya*, Ackermann! Villa Rica, on some other shrub; Pohl! 5726; Var. β. Goyaz, Weddell! 2125. — Flowers only $\frac{1}{2}$–$\frac{3}{4}$ line long, smaller than in any other species, with the exception perhaps of the smallest forms of *C. Palæstina;* of a deep red color when dry; limb of corolla spreading but not reflexed; fruit unknown. In var. β. the pedicels are two or three times as long as the "whitish" flowers; laciniæ and especially filaments much longer and more slender.

†† Lobes of corolla obtuse, not incurved.

57. C. DENSIFLORA, Hooker, fil.! in Fl. N. Zeal. I. 186, not Soyer-Will. — At Port Underwood, on the middle island of New Zealand, on some *Apocynea*, Dr. Lyall! — Perhaps too near *C. racemosa*, but apparently distinguished by the much finer capillaceous stems, the very short capulate calyx, the short, ovate, obtuse-spreading but not reflexed nor inflexed lobes of the corolla, — which are only about one third as long as the deeply campanulate tube, — and by the solitary globose seeds of a brown-red color, with a short linear transverse hilum on the radiately marked umbilicus. — Flower $1\frac{3}{4}$–2 lines long, dotted with yellow glands, which Dr. Hooker describes as oil-canals; pistils the same as in *C. racemosa;* dead corolla covering and enveloping the capsule.

58. C. MICROSTYLA, n. sp.: caulibus filiformibus floribusque glandulosis; cymulis laxis paucifloris; calycis lobis triangulato-ovatis obtusis corollæ tubo profunde campanulato brevioribus; laciniis ovatis [507 (57)] obtusiusculis tubum æquantibus patulis reflexisve; staminibus brevissimis, antheris ovatis filamenta æquantibus; squamis tenuissimis ovatis laciniatis faucem attingentibus; ovario magno ovato-conico tubum replente, stylis subnullis, stigmatibus capitatis pileatis; capsula conica apice e corolla exserta.

On the volcano of Antuco, Chili, Reynolds! 95, in Hb. Hooker. — The only specimen seen is very young, with only few flowers open, and a single half-grown capsule. — Nearly allied with *C. racemosa*, but well distinguished by the large conic ovary with the thick and rudimentary but nevertheless quite unequal styles; flower $1\frac{1}{4}$–$1\frac{1}{2}$ lines long, thick and fleshy, yellow when dry, dotted with darker glands; whole plant furnishing a deep yellow dye.

59. C. CRISTATA, n. sp.: caulibus filiformibus; floribus breviter pedicellatis cymoso-paniculatis basi obtusis late campanulatis; calycis cupulati lobis ovato-orbiculatis glandulosis cristato-carinatis tubum corollæ æquantibus seu superantibus; laciniis late ovatis obtusis tubo æquilongis, patentibus seu demum recurvis; staminibus brevioribus, antheris oblongis filamenta late subulata æquantibus; squamis imæ corollæ adnatis spatulatis laciniato-fimbriatis faucem excedentibus conniventibus; stylis ovario magno ovato apiculato brevioribus fere inclusis, stigmatibus parvis; capsula depressa glandulosa corollæ marcescenti insidente supra nuda; seminibus obovatis obliquis sub lente rugulosis.

Plentiful in the province of St. Jago de Tucuman, La Plata, Tweedie! 1191, in Hb. Hooker. — Flowers on short and thick pedicels, wide open, about $1\frac{1}{4}$ lines long; ovary large, almost filling the tube, subglobose with an abrupt stylopodium in the shape of a fleshy ring; stigma very small, pale yellowish; capsule with a very small intrastylar aperture; seeds brown-red, 0.7 line long, with an oblong, perpendicular, or oblique hilum. Distinguished by the shape of the flower, the pistils, and stigmas from *C. racemosa*, var. *nuda*, and from *C. Gronovii*, with which it is still more closely allied, and which it seems to represent in South America.

60. C. GRONOVII, Willd.! rel. R. & Sch. VI. 205; Choisy! Cusc. 185, t. 4, f. 3; DC. Prod. IX. 459. *C. Americana*, L. Sp. 180, and auctt. Fl. Am. Bor. in part. *C. vulgivaga*, Engelm.! Sill. Journ. l. c. p. 338, t. 6, f. 12–16. *C. umbrosa*, Beyrich! in sched. in part; Hooker! Fl. Bor. Am. II. 78; Torrey! Fl. N. Y. — This, the most common North American species, is characterized by the loosely-paniculate, rarely from the first more compact inflorescence, which at last becomes densely crowded; by the deeply campanulate tube; the obtuse, flat, spreading but scarcely ever reflexed laciniæ; the large, oval, deeply fringed scales; the oval, slightly conic ovary. [508 (58)] Seeds 0.6–0.9 line long, obliquely oval, rarely rostrate, with an oblong-linear, usually perpendicular hilum. — The following varieties may be distinguished: —

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Var. *a.* VULGIVAGA, the comm
denow's original C. Gronovii, in his H
commonly in moist shady places, from
I have seen no specimens from the
calyx usually carinate, and, like
mostly shorter than the tube
the flowers; a small-flowe
4-parted flowers, var.
Var. *β.* LATI
stamens of equ
the flowers
westward

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Var. *a.* VULGIVAGA, the common form, as described and figured in Sill. Journ. and Chois. Cusc. It is Willdenow's original *C. Gronovii*, in his Hb. nro. 3160, a very loosely flowered specimen. — On coarse herbs and shrubs, commonly in moist shady places, from Canada and Maine to Florida, westward to Missouri, Arkansas, and Texas; I have seen no specimens from the Rocky Mountains or from the Pacific coast. Flowers $1\frac{1}{4}$–$1\frac{1}{2}$ lines long; lobes of calyx usually carinate, and, like the laciniæ, shorter than the very deeply campanulate tube of the corolla; scales mostly shorter than the tube, incurved over the ovary; corolla remaining at base of capsule. Variable in the size of the flowers; a small-flowered form is *C. polyantha*, Shuttlew.! in Pl. Rugel from Alabama; sometimes it occurs with 4-parted flowers, var. *tetrameris*, Engelm. l. c.

Var. *β.* LATIFLORA. *C. Saururi*, Engelm.! l. c. p. 336, t. 6, f. 17–21: calyx more membranaceous; laciniæ and stamens of equal length, as long as the shallow tube; scales narrow and longer than the tube; in eastern specimens the flowers are smaller, in western sometimes larger than in var. *a.* — From Massachusetts to North Carolina, and westward to Illinois and Missouri.

Var. *γ.* CALYPTRATA. *C. Bonariensis*, H. B. Carlsr. *C. Chilensis*, H. B. Frib., not Ker.; similar to the first form, flowers even more deeply campanulate, usually glandulous, rather larger, in very loose panicles; corolla remaining on top of capsule. — Western Louisiana, Gregg! Texas, Lindheimer! cultivated in several botanical gardens in Germany.

Var. *δ.* ? CURTA. *C. umbrosa*, Hook. l. c. in part: flowers small, $1\frac{1}{4}$ lines long, glandulous; calyx and short broadly-oval laciniæ half as long as the deeply campanulate tube; anthers triangular-cordate; scales very short, bifid or truncate, appressed to the tube; styles one third or one fourth as long as the conic ovary; corolla surrounding or covering the upper part of the large oval capsule; intrastylar opening large; seeds few and large, nearly 1 line long, compressed, somewhat rostrate, with a small, oblong, transverse hilum. — Northwestern America, Douglas! Fremont! 79 (1845). — Perhaps a distinct species, taking the place of *C. Gronovii* on the Pacific side of the continent.

61. C. ROSTRATA, Shuttlew.! in sched.; Engelm.! in Bost. Journ. N. H. V. 225. *C. oxycarpa*, Engelm.! in sched. — In shady woods, on tall coarse herbs, rarely on shrubs, southern Alleghanies from [509 (59)]
Maryland and Virginia to South Carolina, Rugel! Buckley! Gray & Sullivant! Curtis! — Nearly allied with the last, but flowers larger and wider, 2–3 lines long; scales comparatively small, deeply incised-fringed; ovary elongated, bottle-shaped; capsule, with the elongated 2-pointed beak, $2\frac{1}{2}$–3 lines long; seeds 1–4, when regularly developed 1–$1\frac{1}{4}$ lines long, obliquely obovate, compressed, carinate on the inside, bluntly rostrate, somewhat reticulate, with a short oblong-linear mostly transverse hilum.

§ 3. Lepidanche.

Flowers pedicelled or, mostly, closely sessile; sepals free, similar to the surrounding sterile bracts, imbricate; ovary and capsule more or less conic, thickened and fleshy at the apex; withered corolla covering the capsule like a hood. — *Lepidanche*, Eng. Sill. Journ. XLIII. p. 343.

* Flowers pedicelled, loosely paniculate.

62. C. CUSPIDATA, Engelm.! in Bost. Journ. N. H. V. p. 224; Bot. Zeit. 1846, p. 277. — Parasitic on *Iva*, *Ambrosia* and many other herbs, on wet or dry prairies from southern and western Texas, Lindheimer! 125 and 277, Wright! Schott! Thurber! to the upper Arkansas, Trécul! Fendler! N. Mex. 659, b; Marcy! Bigelow! and to the sandhills of the Platte, Hayden! — A well-marked and easily recognized species; inflorescence loosely paniculate, with many sterile hyaline bracts on the pedicels and at the base of the calyx; flowers membranaceous, $1\frac{1}{2}$–$2\frac{1}{4}$ (mostly 2) lines long; upper bracts and sepals ovate or orbicular, cuspidate or sometimes obtuse; ovary not globose, as I formerly described it, but oval, with a thick stylopodium; capsule thick and glandulous at the apex; seeds rarely more than 0.4 line long, obovate, compressed, rostrate, with a very short oval mostly transverse hilum. The form from Platte river has the smallest flowers, and almost orbicular sepals.

63. C. BRACTEATA, n. sp.: caulibus tenuiter filiformibus; cymis spiciformibus paniculatis; pedunculis pedicellisque crassis bracteis pluribus ovatis obtusis, superioribus lanceolatis acutatis stipatis; sepalis similibus longioribus acuminatis serrulatis tubum corollæ subcylindricum æquantibus; laciniis lanceolatis acuminatis tubo brevioribus reflexis; staminibus multo brevioribus, antheris oblongo-ovatis filamento æquilongis; squamis ovatis crispato-laceris medio tubo adnatis faucem attingentibus; stylis capillaceis ovario minuto multo longioribus inclusis, stigmatibus ovato-capitatis.

Goyaz, Brazil, parasitic on shrubs, Gardner! 3348 in Hb. Hooker. — Similar to the last, but flowers much larger, $2\frac{1}{2}$–3 lines long in a rather contracted inflorescence; peduncles remarkably thick in proportion [510 (60)]
to the stems; stigmata oval, almost twice as long as they are thick, a form that I have not seen in any other species. The only specimen examined is barely in flower; the ovary is probably shaped as in the last species.

* * Flowers closely sessile, crowded in compact and often continuous clusters.

64. C. SQUAMATA, n. sp.: caulibus filiformibus aurantiacis; glomerulis compactis; bracteis 2–5 sub flore sin-

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SYSTEMATIC

rarve sessili late ovatis cuspidatis memb
ssora tubum cylindraceo-obconicum æquan
menta subulata æquantibus; squamis ovatis l
rudimentis calyptrata; seminibus subglob
Fields and wastes on the Rio G
Paso, Wright! 518 (coll. 1849)
Clusters 5–6 lines in diamet
tinuous, in the manner o
closely sessile, in oth
subglobose whe
short oblic



gulo arcte sessili late ovatis cuspidatis membranaceis adpressis sensim in sepala exteriora similia et interiora longiora obtusiora tubum cylindraceo-obconicum æquantia transeuntibus; staminibus brevioribus, antheris oblongo-linearibus filamenta subulata æquantibus; squamis ovatis laciniato-fimbriatis medio tubo adnatis faucem excedentibus conniventibus; stylis capillaceis ovario ovato-conico multo longioribus exsertis; capsula ovata apiculata 1–2-sperma corollæ rudimentis calyptrata; seminibus subglobosis lenticularibusve, hilo oblongo abbreviato.

Fields and wastes on the Rio Grande, on *Artemisia Ludoviciana*, *Helianthus ciliatus* and other weeds, from El Paso, Wright! 518 (coll. 1849) and 1628 (coll. 1852), Bigelow! Thurber! down to Presidio del Norte, Parry! — Clusters 5–6 lines in diameter, consisting of 8–12 flowers; or sometimes small, only 2–3-flowered; occasionally continuous, in the manner of the next species; flowers $2\frac{1}{2}$ lines long, similar in shape to those of the two last species, but closely sessile, in other respects much like the next, but bracts appressed, not squarrose. Seeds 0.6–0.7 line long; subglobose when the capsule has only 1 seed, compressed when it contains 2, oblique but scarcely rostrate, with a very short oblique or transverse hilum, almost a mere dot.

65. C. GLOMERATA, Choisy! Cusc. 184, t. 4, f. 1; DC. Prod. IX. 458. *Lepidanche Compositarum*, Engelm.! Sill. Journ. XLIII. p. 344, t. 6, f. 30–35. *C. Americana* (*monstruosa*), Hook. in Comp. Bot. Mag. I. 173. *C. paradoxa*, Rafin. Ann. Nat. 1820, p. 13, & DC. l. c. 461? — Prairie regions of central North America, on *Helianthus*, *Solidago*, *Vernonia*, *Silphium* and other tall *Compositæ*; rarely parasitic on any other plant: from Indiana, Dr. Clapp! to Illinois and Missouri, Drummond! Engelm.! Riehl! 15 & 16; Kansas, Hayden! the upper Arkansas region, Fendler! 657; southward to the Canadian, Bigelow! and to the Liano in western Texas, Lindheimer! Mr. Riehl found it very destructive to the pear seedlings in his nursery. — This, the most striking of all *Cuscutæ*, has been so fully described,
that very little is to be added. The glomerules almost always form two parallel lines on both sides of the [511 (61)]
stem, wherever it is attached to the stem of the nurse and somewhat flattened, rarely in detached clusters,
where the stem is free; these clusters of flowers run completely together and form at last a continuous spiral coil, 6–10 lines in thickness, and several inches in length; the orange-red filiform stems have by this time entirely disappeared. — Flowers $2\frac{1}{2}$–3 lines long, surrounded by numerous squarrose bracts; lobes of corolla obtuse, not acute; stylopodium larger (Sill. J. l. c. f. 33), or smaller (l. c. f. 34) than ovary proper; flowers often sterile; seeds 2 or mostly 1 in each capsule, 0.5 line long, oval, more or less compressed, very slightly rostrate, small oval hilum transverse.

Rafinesque was no doubt the first to distinguish this species, and his name, a very appropriate one, would have the precedence over the later ones, if he, by his very incorrect description, had not enveloped the whole in so much obscurity, that Choisy's later name is to be preferred.

66. C. COMPACTA, Jussieu! in Hb.; Choisy! Cusc. 185, t. 4, f. 2; DC. Prod. IX. 458; Engelm.! Bost. Journ. N. Hist. V. 225. *C. remotiflora* and *C. Fruticum*, Bertol. Misc. bot. X. 29. *C. Americana*, auct. var. *C. imbricata*, Nutt.! in Hb. *C. coronata*, Beyr.! in Hb. — From the banks of the St. Lawrence in the State of New York southward, and on the Alleghany mountains from Pennsylvania to Georgia and Alabama, almost entirely on shrubs, such as *Corylus*, *Alnus*, *Andromeda*, etc.; only accidentally on herbaceous plants. — Clusters in fruit often $\frac{3}{4}$–$1\frac{1}{2}$ inches in diameter, continuous and thickest where the stem is twined around the nurse, but also abundant where it is free; tube of corolla slender, laciniæ oblong; dead corolla raised on top of the acutish capsule, giving it a pointed appearance; seeds 1–2, rarely 3–4, in each capsule, 0.8–1.0 line long, oval oblique, lenticular or carinate inside, scarcely rostrate; hilum small, oblong, perpendicular or transverse.

Var. β. ADPRESSA. *Lepidanche adpressa*, Engelm.! in Sill. Journ. XLV. p. 77. *C. acaulis*, Raf. Ann. Nat. 1820, p. 13? — Shady woods in rich bottom-lands along streams in the Mississippi valley, on *Cephalanthus*, *Cornus*, *Salix*, *Bignonia*, *Vitis*, *Rhus Toxicodendron*, *Smilax*, and some herbaceous plants; western Virginia to Illinois and Missouri, and southward to western Louisiana and Texas. — Tube of corolla wider, more deeply immersed in the calyx, lobes broader, capsule thicker, not so much pointed, and corolla not so much raised above it, so that the clusters, especially in fruit, appear more obtuse; seeds of same size as in *a.*, usually 2–4 in a capsule, compressed, scarcely
carinate, with a longer, transverse hilum. The difference in the seeds appears to be constant, and proves [512 (62)]
again that in this genus not much reliance can be put on characters derived from them.

SECT. 7. LOBOSTIGMA.

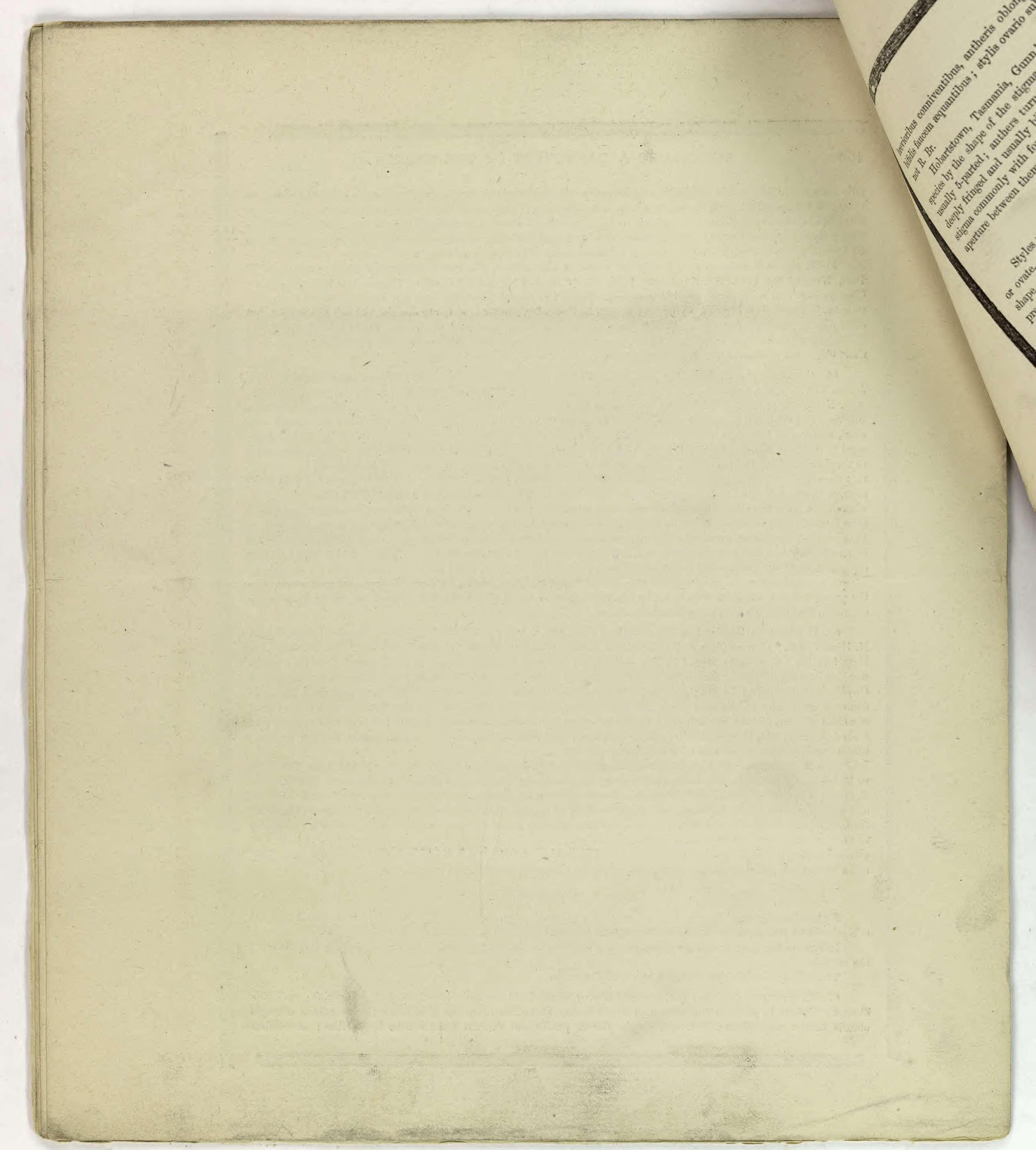
Styles of nearly equal length, clavate towards the flattened stigmatose top, which is divided into several unequal orbicular lobes, and depressed in the centre; capsule baccate.

Inflorescence a loose fasciculate cyme, bracts at the base of the long pedicels; corolla enveloping and covering the capsule.

The only species of this section is a native of Tasmania.

67. C. TASMANICA, n. sp.: caulibus capillaceis; cymis laxifloris umbellato-fasciculatis compositis; pedicellis elongatis clavatis in calycem turbinatum profunde fissum abeuntibus; floribus glandulosis; lobis calycis oblongis obtusis tubum æquantibus; laciniis oblongis obtusis patulis seu demum reflexis tubo longioribus; staminibus

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brevioribus conniventibus, antheris oblongo-linearibus filamento crasso longioribus ; squamis angustis apice fimbriato bifidis faucem æquantibus ; stylis ovario subgloboso fere longioribus exsertis. — *C. australis*, Hook. fil.! Fl. Tasm. 278, not R. Br.

Hobartstown, Tasmania, Gunn! 1991, in Hb. Hooker. — Well characterized and distinguished from any other species by the shape of the stigma. Fascicles of 4–8 flowers aggregated in larger cymes ; flowers $1\frac{1}{2}$–$1\frac{3}{4}$ lines long, usually 5-parted ; anthers turned inward, with a very broad commissure on the back ; scales crenulate on the sides, deeply fringed and usually bilobed at the tip ; styles nearly as long as lobes of corolla, much longer than the stamens ; stigma commonly with four unequal lobes ; styles in fruit subulate from a broad divaricate base, distant, with a small aperture between them ; no ripe seeds seen.

Sect. 8. MONOGYNELLA.

Styles united entirely or for the greater part of their length, thick and compressed ; stigmata capitate, subglobose or ovate, distinct or more or less coalescent. Capsule regularly circumscissile, usually 2-seeded ; dissepiment of the shape of the capsule, transparent, with a thicker rim, entire, no part adhering to the base of the style. Seeds compressed, oblique, more or less rostrate, with a long linear transverse hilum. Anthers sessile, or on very short filaments, often attached to the tube below the throat.

Stems thick ; flowers comparatively small, always 5-parted, sessile or on short pedicels, supported by bracts, in small cymules, which form a compound spike or raceme ; withered corolla remaining, hoodlike, [513 (63)] on the very top of the large capsule.

Parasitic mostly on ligneous plants. Of the eight species of this section, five belong to the continent of Asia, two of which extend into Europe ; one is peculiar to the island of Timor, one to South Africa, and one to Texas.

68. C. EXALTATA, n. sp.: caule funiculari ; floribus breviter pedicellatis seu sessilibus spicato-paniculatis ; calycis globosi lobis fere disjunctis orbiculatis concavis imbricatis medio verrucosis corollæ tubum cylindricum æquantibus ; laciniis orbiculatis imbricatis tubo multo brevioribus erectis seu erecto-patulis ; antheris cordato-orbiculatis ad faucem sessilibus ; squamis bipartitis dentatis tubo multo brevioribus ; stylo apice bifido ovario ovato-globoso æquilongo, stigmatibus subglobosis.

Parasitic on *Diospyros Mexicana*, *Ulmus crassifolia*, *Quercus virens*, *Juglans*, *Rhus*, etc., 10–20 feet high, in western Texas, on the Guadaloupe and Cibolo, Lindheimer! 472 ; on the Colorado and Blanco, Wright! on the Leona and at the mouth of the Pecos, Bigelow! on the Rio Grande, Schott! — Stems 1–2 lines in diameter ; compound panicles several inches in length ; flowers 2 lines long, small tube hidden in the large calyx ; anthers closely sessile ; scales reduced to two dentate wings on the sides of the very distinct attached filaments, united at base ; upper fourth of the thick style divided ; stigmas depressed, thicker than the ends of the style ; capsule $3\frac{1}{2}$–5 lines long ; seeds $1\frac{1}{2}$–$1\frac{3}{4}$ lines long, somewhat triangular, very slightly rostrate. The large embryo is coiled up in 2–3 rounds ; on the upper (thinner) end 3–4 alternate scales may be distinguished. This is the only species of this section where the styles are not completely united. I formerly distributed it under the name of *C. gamostyla*.

69. C. CASSYTOIDES, Nees ab Esenb.! in Linnæa, XX. p. 196, sine descr.: caule funiculari ; floribus subsessilibus cymoso-spicatis ; calycis globosi lobis orbiculatis concavis imbricatis verrucosis corollæ tubum latum breviter cylindricum includentibus ; laciniis ovatis obtusis vix basi imbricatis erectis tubum æquantibus ; antheris cordato-ovatis ad faucem sessilibus ; squamis tenuissimis apice truncato pauci-dentatis tubo brevioribus ; stylo ovario ovato-conico æquilongis, stigmate capitato bilobo ; capsula ovata ; seminibus ovato-triangulatis tenuiter verruculosis.

Cape of Good Hope ; primitive forests of Uitehage, Drege, 8037 ; Hangklipp, Mund & Maire ; Zeyher II. 3631 (120.5). — Flowers in spiked cymules, $1\frac{3}{4}$ lines long, shorter than in the last species ; [514 (64)] scales united at base, ovate obtuse or truncate, scarcely dentate ; styles united entirely ; stigma divided almost to the base, lobes subglobose ; capsule 3–4 lines long, subglobose ; seeds of the same size and shape as in the last species.

70. C. TIMORENSIS, Decaisne! mss.: caule funiculari ; floribus racemoso-spicatis seu axi indeterminata apice bracteata spicatis ; pedicellis inferioribus longioribus bracteatis, superioribus brevissimis nudis, omnibus bractea ovato-orbiculata concava suffultis ; calycis profunde partiti lobis orbiculatis concavis imbricatis tubum corollæ brevem campanulatum æquantibus ; laciniis ovatis obtusis tubo brevioribus erectis seu sæpe patulis reflexisve ; antheris cordato-ovatis tubo infra faucem adnatis ; squamis ad cristulas binas convergentes reductis seu subnullis ; stylo cum stigmatibus ovatis compressis ovarium subglobosum æquante ; capsula ovata conica sub-2-sperma ; seminibus orbiculato-triangulatis compressis. — *C. reflexa*, Dne.! in Hb. Timor. descr. p. 66, not Roxb.

Island of Timor, Leschenault! in Hb. Mus. Par. — The tendency to a regularly spiked inflorescence, which is observed in this whole group, is more decidedly developed in this species. The main axis of the inflorescence is terminated by an imbricately bracted bud, never by a flower. The lower lateral flowers open first, and the upper ones in succession ; all, or only the lower ones, are supported by pedicels bearing lateral flowers ; the upper ones often have

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shorter pedicels, with two or three sterile bracts; the uppermost ones are commonly quite short and bractless. Flowers $1\frac{1}{2}$–$1\frac{3}{4}$ lines long; anthers almost sessile a little below the throat; scales very indistinct, consisting mostly of two slight ridges converging towards the base of each anther; stigmas of the length of the style and scarcely thicker, oval and compressed; capsule about 3 lines long; seeds $1\frac{1}{4}$ lines in diameter.

71. C. MONOGYNA, Vahl. Symb. II. 32; DC. Prod. IX. 450, & auctt. in part. *C. orientalis*, Tournef.! Cor. 45; Sibth.! in Hb. Jacq. *C. astyla*, Engelm.! Bot. Zeit. 1846, IV. 276. *Monogynella Vahliana*, DesM.! Et. 65. *C. scandens*, Brot. Lusit. I. 208 ?? — On shrubs and trees, as *Salix*, *Tamarix*, *Pistacia*, *Vitis*, etc.; also on herbaceous plants, *Euphorbia*, etc.; from southern Europe through middle Asia southeastward: Portugal (?Brot.); southern France, almost always on the grape vine (introduced?), Delisle! Requien! etc.; Roumelia, Frivaldski! specimens often mixed with *C. Europœa;* Crimea, Trautvetter; Greece, Heldreich! Orphanides! Asia Minor, Sibthorp! Wiedemann! Syria, Tournefort! in Hb. Banks, Labillardière! Blanche! Caucasus and Georgia, Hohenacker! Prescott! Wilhelms! Frick! Koch! Soongaria, Schrenk! Persia, Buhse! Noë! Kotschy! 713; Afghanistan, [515 (65)] Griffith! 682 & 684. — Vahl's description, "dentibus corollæ lanceolatis," etc., does not exactly agree with our plant, nor is Sibthorp's figure, Fl. Græc. t. 257, very correct; but the locality of the former and an authentic specimen of the latter (in Hb. Jacq.) leave no doubt that both had the plant in view which I formerly distinguished as *C. astyla*. — The inflorescence is a compound spike, consisting of a terminal and several lateral cymes of 2–3 or 4 sessile flowers; the lowest cymes open first, and are sometimes branched. Flowers $1\frac{1}{4}$–$1\frac{1}{2}$ lines long; corolla 1–$1\frac{1}{4}$ line in length; laciniæ oval or orbicular, very obtuse, delicately crenulate, erect, scarcely more than half as long as the tube, which is entirely enclosed in the calyx; anthers ovate or triangular-ovate, cordate at base, almost sessile a little below the throat; scales attached to the middle of the tube, of the shape of a horseshoe, forming a narrow denticulate or slightly fimbriate border, which is sometimes truncate or even bifid; style very short, equal in length to the subglobose 2-lobed stigma, much shorter than the oval or globose ovary; capsule 2–3 lines long, usually oval and obtuse; seeds rarely more than 2, ovate, strongly rostrate, slightly rough. — *Mon. Blancheana*, DesM.! in litt. is a form with a somewhat elongated conic capsule, which occurs in Syria and Georgia, and which approaches the next species.

72. C. LEHMANNIANA, Bunge! in Lehm. Rel. in Mem. Sav. Ét. VII. 396. — Bokhara, on the banks of the Jan-Darja, A. Lehmann! — Flowers pedicelled in a thyrsoid inflorescence, slender, $2\frac{1}{2}$–$2\frac{3}{4}$ lines long; corolla 2–$2\frac{1}{4}$ lines in length; laciniæ oval, crenulate, shorter than the tube, erect or spreading; scales horseshoe-shaped, attached to the middle of the tube, and covering the base of the ovate-cordate anthers, which are sessile below the throat; style much shorter than the oval or subglobose ovary, of the length of the distinctly 2-parted oval stigma; capsule oval. The shape and proportion of the corolla is similar to that of the next species, especially of its Asiatic form; the pistil is like that of the last species; the position of scales is quite peculiar. I class with this a form from Asia Minor:

Var. β. ESQUAMATA: pedicels as long as, or often longer, than the calyx; oblong lobes of the corolla still more distinctly crenate, not much shorter than the tube, spreading, on the fruit erect or twisted; anthers still shorter; scales almost entirely adnate, commonly showing only a denticulate crest on both sides; stigma globose or oval, almost sessile. — On *Pistacia Terebinthus*, on Mount Sipyle, near Magnesia, Balansa! 411. — Flowers $2\frac{1}{2}$ lines, corolla 2 lines long, more deeply divided than in the allied species.

73. C. LUPULIFORMIS, Krocker! Siles. I. p. 261, t. 36. *C. monogyna*, auctt. Fl. Germ. al. — [516 (66)] On willows, etc., on the banks of streams from eastern and northeastern Germany, Silesia, where it seems to be common on the Oder, Lessing! Göppert! Günther! al., Bohemia and Austria, Kovats! to Hungary, Gerenday! and to central Russia, Kasan, Graff! — Flowers subsessile, or on at last slightly elongated pedicels; cymes forming elongated spikes, or sometimes more or less compound racemes, which are always terminated by a 2- or 3-flowered cyme; flowers 2–$2\frac{1}{2}$ lines long; lobes of calyx oval, obtuse or almost pointed, half as long as tube of corolla; laciniæ oblong, obtuse, erect, half as long as tube; anthers oblong-linear, sessile below the throat; scales short, attached to the lower part of the tube, bifid or reduced to lateral crenulate wings; ovary oval, conic, attenuated into the slender style, which is much longer than the globose or oval deeply bilobed stigma. Capsule conic, 3–4 lines long; seeds triangular-oval, rostrate, $1\frac{1}{4}$–$1\frac{1}{2}$ lines long.

Var. β. ASIATICA: flowers often longer and more slender, on longer pedicels; laciniæ more crenulate and somewhat spreading; anthers on short but distinct filaments; scales entire, broadly oval, fimbriate and somewhat incurved. *C. flava*, Siev. ap. Pall. probably belongs here. — On *Tamarix*, *Salix*, etc., from the banks of the Wolga, Fischer! Becker! where it seems to join the western form, eastward through the southern parts of Asiatic Russia, Caucasus, Hb. Hooker! Soongaria, Schrenk! 229 & 306, b (the last a form with very slender flowers and longish pedicels); Buchtarminsk, Karelin & Kiriloff! 926; Altai, Ledebour! Bunge! Gebler! 180, to the river Angara, Turczaninoff!

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C. lupuliformis, having been published as early as 1787, has by four years the priority over Vahl's name, *C. monogyna*, published in 1791, and must stand for the species with all those botanists who consider both plants as identical; but it so happens that *C. lupuliformis* properly designates the species which in Europe and Asia extends north of the 43d or 44th degree, and *C. monogyna* that which grows south of that latitude.

74. C. GIGANTEA, Griffith, Notul. I. 243. — On *Tamarix*, Siah-sung ravine, Afghanistan, 10,300 feet high, Griffith! 1031 (683). — Griffith's specimens corresponding best with his description are all parasitic on *Tamarix*, and not on *Salix* or *Populus*, as he says in his Notulæ; nor are the stems very thick, but rather filiform. Otherwise his detailed description — especially that of the corolla, the scales, and the stigmas — agrees so well with his specimen in question, that I cannot doubt about his having it in view; but he may have confounded it [517 (67)] with *C. monogyna*, which he has collected on willows.

The inflorescence forms racemose spikes after the manner of this section, but shorter, only $\frac{1}{2}$–$\frac{3}{4}$ inch long, flowers $2\frac{1}{2}$–$2\frac{3}{4}$ lines long, membranaceous, on short pedicels; calyx covering one half of the tube; laciniæ linear-oblong, obtuse, crenulate, a little shorter than the tube, spreading, or reflexed; ovate-cordate anthers very large, subsessile a little below the throat; scales oval, fimbriate, reaching from the base to the middle of the tube; style as long as the conic ovary and the oblong, elongated, somewhat ligulate (linguiformia, Griff.) stigmas.

75. C. JAPONICA, Choisy! Pl. Zoll., 1854, p. 130 & Pl. Jav. 1858, p. 30. — This species extends in several forms along the whole coast of China and to Japan; all the different varieties are characterized by a very short cupulate calyx, with rounded, mostly cristate lobes, which cover scarcely more than $\frac{1}{4}$ of the corolla; by the oval or rounded, very slightly crenulate, sometimes cuspidate, spreading or reflexed laciniæ, which have $\frac{1}{2}$ or $\frac{1}{3}$ the length of the cylindrical or slightly widening tube; by the oval anthers, sessile or subsessile at the throat; by the entire, ovate, fimbriate, incurved scales; by the elongated style, with 2 ovate, more or less conic or subulate, stigmas. Flowers $2\frac{1}{2}$–3 lines long.

Var. *a.* THYRSOIDEA: flowers subsessile with several bracts at base, in a compact, thyrsoid raceme, often 2 inches long and $\frac{1}{2}$ inch thick; scales from the lower part of the tube, reaching almost to the base of the anthers; styles longer than the conic ovary; stigmas short and conic. — This is Choisy's original *C. Japonica*, and also *C. reflexa*, var. *densiflora*, Bentham! in Hb. — Japan, Zollinger! 355; Hongkong, Abbé Furet! Maj. Champion! 457. — *C. systyla*, Maximowitsch! Primit. Fl. Amur. ined., from the lower Amur, is exactly the same plant, with shorter scales, and rather oval than conic stigmas. From *C. lupuliformis*, var. *Asiatica*, to which it closely approaches, it is distinguished by the short calyx and the shape and insertion of the stamens.

Var. *β.* PANICULATA: flowers on short pedicels, scarcely bracted at base, in a loosely flowered panicle, 1–2 inches long and of the same diameter; narrow scales reaching from the base to the middle of the tube; stigmas conic-subulate, as long as style and as ovary. — *C. colorans*, Maxim.! l. c. — Pekin, Kirilow! in Hb. Fischer, now Hb. H. B. Petrop.

Var. *γ.* ? FISSISTYLA: inflorescence same as last; scales from the middle of the tube, not reaching the base of the anthers, broad and often partly confluent; styles united only at their lower third; stigmas conic. — Hongkong, Chas. Wright! U. S. North Pacif. Expl. Exp., nro. 486.

The subulate or conic stigmas, and the often more paniculate than spiked inflorescence, indicate a [518 (68)] close approach to the next species, which to Mr. Bentham was so evident, that he considered our plant a mere variety of it; but the structure of the capsule, with the corolla persisting on its top and the dissepiment in its base, shows that it truly belongs to *Monogynella*. The dissepiment is membranaceous, with a thicker centre, but without the thick frame-like border of the allied species.

SECT. 9. CALLIANCHE.

Stigmata distinct, elongated, conic or subulate, sessile or almost sessile. Capsule regularly circumscissile, usually 4-seeded, dissepiment extremely thin, partly evanescent, stylar portion small. Seeds compressed, rostrate, angled on the inside, with a long, linear, transverse hilum.

Flowers large, 5-parted, usually on bracted pedicels in compound loosely paniculate cymules; corolla deciduous after flowering. The only species inhabits East-India and the adjoining islands.

76. C. REFLEXA, Roxb. Corom. 104; Fl. Ind. I. 446. — This beautiful species bears the largest flowers of any, in different varieties from 3–5 lines long; calyx with oval or mostly rounded, very often cristate or verrucose lobes, much shorter than the cylindric tube of the corolla; laciniæ spreading or reflexed, on the margin revolute, much shorter than the tube; anthers oval to oblong-linear, sessile or subsessile; scales in the base of the tube, about $\frac{1}{2}$ or $\frac{1}{3}$ its length, with short and delicate curly fringes, curved; ovary oval, acutish, often attenuated into a short, slightly bifid style, or with sessile stigmas; capsule subglobose, about 4 lines in diameter; at maturity, only the lowest part of the thin dissepiment remains; seeds $1\frac{1}{2}$ lines long. — The following forms are specifically distinguished by most authors; Choisy, however, in Pl. Zoll. already suspected their identity, and different as they seem to be at first sight, I can not but consider them as mere varieties.

Var. *a.* GRANDIFLORA. *C. grandiflora*, Wall.! Cat. nro. 1318, not HBK. *C. macrantha*, Don.! Gen. Syst. IV.

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305; DC. Prod. IX. 455. *C. megalantha*, Steud. Nom. *C. elatior*, Choisy! Cusc. 177. — Flowers of the largest size; laciniæ $\frac{1}{3}$ or sometimes only $\frac{1}{4}$ the length of the tube; anthers elongated, on very short filaments separating from the tube below the throat; stigmas elongate, subulate, divaricate, usually on a very short style. This is no doubt Roxburgh's original *C. reflexa*, as his figure and description, "stigmata large, spreading, pointed," [519 (69)] prove. — In the temperate as well as the tropical parts of India, from the Himalaya, Wallich! 1318 & 1319 [2]; Lady Dalhousie! Jacquemont! 1109 & 2183; Strachney & Winterbottom! 1 & 2; Hofmeister! Hooker, f. & Thomson! Sikkim, the same! Khasia, the same! to the low lands of the coast of Coromandel, Roxburgh, and to Ceylon, Gardner! 616; Thomson! and Java, Zollinger! 2839. — The specimens from the islands are remarkably stout, and have a larger calyx than the ordinary form. It often occurs with verrucose bracts, pedicels, and calyx or even verrucose stems; this is *C. verrucosa*, Sweet, Fl. Gard. t. 6, not Engelm.; *C. Hookeri*, Sweet, Hort. Br. p. 290; *C. reflexa*, var. *verrucosa*, Hook.! Fl. Exot. t. 150.

Var. β. BRACHYSTIGMA. *C. reflexa*, Wallich! Cat. in part; Edgeworth! in Linn. Trans.; Choisy, DC. Prod. l. c.; and most authors, not Roxb. *C. pentandra*, Heyne! in Hb. H. B. Petrop. — Flowers smaller; laciniæ $\frac{1}{2}$ or $\frac{1}{3}$ the length of the tube; anthers shorter, sessile at the throat of the corolla; stigmas short, conic, closely sessile, erect. — Calcutta, Gaudichaud! 129, and valley of the Ganges in general, Jacquemont! 149 & 2520, de Silva! in Wall. Cat. 1319 [1], to the Punjab and the western Himalaya, Hooker, f. & Thomson!

Jacquemont's 149, from Bengal, has the corolla and anthers of var. α., and the short erect stigmas of var. β.; style distinct, almost as long as the stigmas.

C. anguina, Edgeworth! Trans. Linn. Soc. XX. 86, from the Himalaya, is a small-flowered form with more deeply divided tube, otherwise the same as var. β.

C. aphylla, Raf. in Spr. N. Ent. I. 145, and DC. Prod. IX. 461, from the Wabash, is perhaps the same as *C. glomerata*.

C. Epibotrys, *Uva barbata* or *Ampelepogon*, is the name given to the numerous capillary stems of a *Cuscuta* which occasionally have been found parasitic on the unripe berries of the grape vine; they often seem to be without flowers; in one instance they have been ascertained to belong to *C. Epithymum*.

C. subuniflora, Koch, in Linnæa XXII. 748, from Asia Minor, I have not seen; it may be a depauperate form of *C. brevistyla*.

C. triflora, E. Mey. in Pl. Drege, from the Cape of Good Hope, is, as well as *C. funiformis*, Willd., a species of *Cassyta*.

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VI. COLLECTED DESCRIPTIONS OF CUSCUTA.

[It has been thought best not to reproduce the accounts of this genus contributed by Dr. Engelmann to Gray's Manual, ed. 5; Botany of California, I.; Botany of Wheeler's Expedition, 1878; and Gray's Synoptical Flora of North America, II. part 1, — as they add little to his earlier papers. But descriptions of new species contained in them are included in the following pages. — Eds.]

From Engelmann and Gray's Plantæ Lindheimerianæ. (Boston Journ. Nat. Hist. Vol. V. 1845.)

123. Cuscuta neuropetala, Engelm. in Sill. Journ. XLV. p. 75, β. minor. A smaller, earlier [223 (15)] flowering form, growing in drier places, mostly on *Petalostemon multiflorum*, but also on *Liatris*, and even on *Euphorbia corollata*. It approaches *C. hispidula* so much that not improbably further investigation of living plants may prove both to be only varieties of a single species, for which the name of *C. porphyrostigma* would be most appropriate, as all the forms that would belong to it are distinguished from every other known North American species by the purplish-brown stigmas. Another remarkable variety is

124. C. neuropetala, Engelm. γ. littoralis: cymis paniculatis; floribus majoribus pedunculatis; tubo corollæ late campanulato calycis segmenta late ovata acutiuscula subcarinata et lacinias limbi enervias ovatas abrupte acuminatas crenulatas patentes subæquante; squamis tubum subæquantibus. — Seashore of Galveston Island, on *Lycium Carolinianum*, *Borrichia frutescens*, *Iva frutescens*, etc. Flowers in May. Different from the inland form by the much larger, more openly campanulate flowers, expanding in spring; by the hardly carinate, broader, and not so

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the upper part of the globose capsule. — It appears to be an intermediate form between *Cuscuta* proper and *Lepidanche*. The var. β. has larger and thinner flowers, of paler color, and the lobes of the corolla lanceolate and acute.

126. C. pentagona, β. calycina, Engelm. Wet prairies. June.

127. C. verrucosa, Engelm., l. c. Dry prairies. July.[1]

[1] An undescribed North American species, collected in the | composed, especially about the tube, of regular, somewhat

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acute sepals, and the bros
and anthers purple or yel
125. *C.* CUSPIDATA,
dispositis 5-fidis; tubo cor
limbi ovatas acutiusculas
fimbriatis tubum subæquan
corolla marcescente obtecta.
Var. a. PRATENSIS: flo
corollæ segmentibus
parvum

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acute sepals, and the broad lobes of the corolla, which are rarely somewhat nerved; stigmata also purple, [224 (16)] and anthers purple or yellow.

125. C. CUSPIDATA, Engelm. n. sp.: caule filiformi ramosissimo; floribus pedunculatis in cymas laxas bracteosas dispositis 5-fidis; tubo corollæ cylindrico sepala usque ad basin libera ovata concava (exteriora cuspidata) et lacinias limbi ovatas acutiusculas uninervias erectas s. patentes superante; staminibus limbo brevioribus; squamis ovatis fimbriatis tubum subæquantibus; stylis filiformibus ovario (minuto) globoso pluries longioribus; capsula globosa corolla marcescente obtecta.

Var. *a.* PRATENSIS: floribus minoribus; calyce bracteis paucis involucrato; tubo corollæ subcylindrico calycis et corollæ segmentibus paulo longiore; staminibus limbi laciniis ovatis acutiusculis duplo brevioribus; stylis ovarium parvum duplo superantibus. — Dry prairies west of the Brazos, on *Tephrosia*, *Bradburia*, *Ambrosia*, etc. June.

Var. *β.* HUMIDA: floribus majoribus; calyce bracteis pluribus involucrato; tubo corollæ infundibuliformi calycis et corollæ segmenta duplo superante; staminibus laciniis limbi lanceolatis acutis paulo brevioribus; stylis ovarium minutum quater superantibus. Bottom lands of the Colorado, on *Iva ciliata*, *Ambrosia trifida*, etc. August, 1844 (No. 276 infra).

A remarkable species. The stems are very much branched, filiform; inflorescence loose paniculate, pedicels with many cuspidate bracts, some of them surrounding the calyx like an involucrum, similar in shape but smaller than the sepals; sepals somewhat lacerate or crenulate, ovate, carinate (the carina less distinct in the var. *β.*), cuspidate, interior ones rather obtuse, all concave, loosely imbricated. Lobes of corolla thin, membranaceous, with a strong middle nerve, formed by large oblong or linear cells; when dry, convolute; the exterior ones generally somewhat cuspidate, the interior ones obtuse; at the base the lobes are dilated and cover one another more than in any other North American species. Styles remarkably slender and long, about the length of the stamens, but elongated after flowering, when the corolla assumes an urceolate shape, and finally covers like a hood [225 (17)] the upper part of the globose capsule. — It appears to be an intermediate form between *Cuscuta* proper and *Lepidanche*. The var. *β.* has larger and thinner flowers, of paler color, and the lobes of the corolla lanceolate and acute.

126. C. PENTAGONA, *β.* CALYCINA, Engelm. Wet prairies. June.

127. C. VERRUCOSA, Engelm., l. c. Dry prairies. July.[1]

[1] An undescribed North American species, collected in the Alleghanies of Virginia and North Carolina by Dr. Gray and Mr. Sullivant, in the autumn of 1843, is here appended. (This was named *C. oxycarpa*, n. sp.; but just as these sheets are going to press, Dr. Engelmann writes that Mr. Shuttleworth has distributed the same plant from Rugel's collection, with a printed label, under the name of *C. rostrata*, which he therefore now substitutes for his own. — A. GR.)

C. ROSTRATA, *Shuttlew. in coll. Rugel:* caule ramoso; floribus pedunculatis cymoso-umbellatis 5-partitis; tubo corollæ globoso-campanulato calycis segmenta ovata obtusa leviter crenulata et lacinias limbi ovatas obtusas patentes (demum reflexas) duplo superante; staminibus limbum subæquantibus; squamis fimbriatis (convergentibus?) basi inter se connatis; stylis filiformibus ovarium stylopodio ejusdem longitudinis coronatum pyriforme subæquantibus; corolla marcescente ad basin capsulæ (maximæ) acutatæ persistente. — Alleghany Mountains from Virginia to South Carolina (*Mr. Buckley!* 1842), *Prof. Gray* and *Mr. Sullivant!* 1843. — August to October. — Particular localities recorded by Messrs. Gray and Sullivant are: Grandfather and Negro Mountains, N. Carol.; Tygart's Valley, Va.; and "common in moist, shady ravines in western Virginia." The specimens which came under my observation grow on *Urtica*, *Rubus*, *Aster*, *Solidago*, *Rudbeckia*, and some other plants.

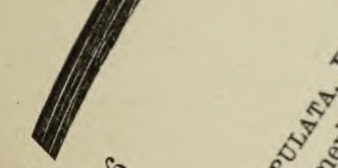
After repeated and careful investigation, and with some hesitation, I have admitted this mountain plant as a distinct species, different from *C. vulgivaga*. The large pointed capsule would seem to characterize it at once; but *C. vulgivaga* offers so many different forms and sizes of the capsule, that other characters were necessary; and they are found in the tissue of the corolla, which is ever destitute of the large pellucid dots constantly observed in *C. vulgivaga*, but is composed, especially about the tube, of regular, somewhat elongated, hexangular cells, easily distinguishable in dried specimens with a common glass. In the common species the cells are linear, mostly much elongated, interspersed with the large air-cells which have been frequently mentioned. The flowers are mostly twice as large as in *C. vulgivaga*, but of the same shape and proportion, about 2 and sometimes (especially in Tygart's Valley specimens) 3 lines long; but the elongated ovary, whose stylopodium is nearly as long though only half as thick as the ovary proper, distinguishes it at once even from those forms of *C. vulgivaga* where the stylopodium is unusually large. The filiform styles are at first about the length of the stamina, but soon after they are long exserted. The capsule is very large, fully 3 lines long, globose, attenuated to a bifid point; it is larger and more acute than in any other known American species. — During the same journey the following species was abundantly collected: —

C. (LEPIDANCHE) COMPACTA, *Choisy:* caule ramoso; floribus sessilibus glomeratis 5-partitis; sepalis sub-novem leviter crenulatis orbiculatis concavis adpressis, interioribus minoribus; tubo corollæ cylindrico calycem et lacinias limbi lineari-oblongas obtusas duplo superante; staminibus limbo brevioribus; squamis pinnatifido-laciniatis; ovario cum stylopodio stylos subæquante; capsula globosa subacuta corolla marcescente obtecta 1–4-sperma. — North Carolina to Alabama, in the mountains, on shrubs, frequently on evergreens; on *Corylus rostrata*, Buncombe Co., N. Carol.; on the same, and on *Andromeda axillaris* or *spinulosa*, on the sides of Negro Mountain, N. Carol., *Prof. A. Gray* and *Mr. W. S. Sullivant;* in Alabama, on *Prinos glaber*, *Dr. Gates* (*Herb. Gray*).

This is clearly the *Cuscuta compacta* of Choisy's monograph (and of *DC. Prodr. excl. syn.*), described after speci-

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C. CUPULATA.



silibus, pentame
corollae cam
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From the Botanische Zeitung, Vol. IV. No. 16, April 17, 1846.

C. cupulata, Engelm. in litt. : caule capillaceo ; glomerulis multifloris, capitatis, sessilibus ; floribus arcte sessilibus, pentameris ; calycis campanulati, cupulati lobis transversim ovatis, apice carinatis, abrupte cuspidatis ; tubo corollæ campanulato, calyce breviore, lacinias limbi ovatas, acutiusculas, erectas, demum patentes æquante ; staminibus limbo brevioribus, filamentis filiformibus, antheris orbicularibus ; squamulis truncatis, apice fimbriatis, convergentibus ; stylis cum stigmatibus ovarium globoso-depressum duplo superantibus, apice divergentibus ; stigmatibus stylorum longitudine ; corolla circum capsulam globosam circumscissam marcescente.

Diese, der *C. Epithymum* näher als der *C. Europæa* verwandte Art, wurde von Godet am Caucasus, von Ledebour am Altai gesammelt. Choisy begreift sie mit Unrecht unter *C. major*. — A. Braun.

From Gray's Manual, ed. 1, Boston and Cambridge, 1848.

2. C. chlorocarpa, Engelm. : low, orange-colored ; flowers almost sessile, clustered ; *corolla* mostly 4-cleft, *open-bell-shaped, the tube about the length of the acute lobes and calyx teeth*, remaining persistent around the base of the depressed pod, the scales cut-fringed or cleft (rather small) ; stamens as long as the lobes. (*C. Polygonorum, Engelm.*) — Low grounds, covering *Polygona* and other herbs, Ohio and westward.

3. C. tenuiflora, Engelm. : much branched, twining high, pale-colored ; flowers at length peduncled and in rather loose cymes ; *tube of the corolla cylindrical* (ventricose after flowering), *twice the length of the obtuse* [351] *spreading lobes* and of the ovate obtuse calyx-lobes, in fruit borne on the summit of the depressed pod ; scales ovate, cut-fringed ; stamens shorter than the lobes of the corolla. (*C. Cephalanthi, Engelm.*) — Swamps, common through the Western States, on *Cephalanthus* and various tall herbs.

From Gray's Manual, 5 ed., New York, 1868.

3. C. inflexa, Engelm. : flowers peduncled, in umbel-like cymes, 1″ long ; *tube of the mostly 4-cleft corolla* [378] *as long as the ovate acutish and minutely crenate erect inflexed lobes* and the acute keeled calyx lobes ; scales *minute and few-toothed*, appressed ; pod depressed, somewhat umbonate, of a thicker texture, brown, its top covered with the remains of the corolla. (*C. Coryli, Engelm. C. umbrosa, Beyrich*, and Ed. 2.) — Prairies and barrens, in rather dry soil, on Hazels, *Ceanothus*, and other shrubs or herbs ; from Western Virginia and Illinois southward and westward.

From Parry's Botanical Observations in Southern Utah, No. 5. (Amer. Nat., Vol. IX. 1875.)

205. Cuscuta denticulata, n. sp. : stems very slender, hair-like ; flowers few, in loose glomerules, on [348] short pedicels, small (scarcely one line long), white ; lobes of the deeply divided globular calyx almost orbicular, overlapping, concave, thinly membranaceous, denticulate, covering the short campanulate (finally urceolate) tube of the corolla ; lobes broadly oval, obtuse, spreading, at last reflexed, as long as the tube ; scales narrow, denticulate, reaching to the base of the ovate, almost sessile anthers ; styles slender, as long as the conical, pointed ovary, bearing slightly thickened (scarcely capitate) stigmas ; capsule covered by the withering corolla, indehiscent (?), enclosing one or two seeds. — St. George, Utah, on shrubs and herbs (*Coleogyne, Biscutella*) in arid soil ; the first addition to our Cuscuta-flora since my synopsis was published, 16 years ago. Apparently allied to *C. applanata*, Eng., of Arizona, but with much smaller flowers and an acute, not depressed ovary, different calyx, etc.

206. *C. Californica*, var. (?) *squamigera*, Engelm. Cusc. p. 499. On *Suæda diffusa*, Watson. Originally found in the same region by Remy and in Arizona by Dr. Palmer, always on saline herbs ; no collector has obtained the fruit as yet.

From the Botany of California, Vol. I. Cambridge, 1876.

3. C. salina, Engelm. n. sp. : stems slender ; flowers (1½ to 2½ lines long) pedicelled in loose cymes, [536] shorter and wider than in the next [*C. subinclusa*] ; lobes of the calyx ovate-lanceolate, acute, as long

mens collected in Alabama and Georgia ; the notice in Silliman's Journal, Vol. XLIV. p. 195, must therefore be corrected. — It is very near *Cuscuta* (*Lepidanche*) *adpressa*, which thus far has only been found on the bottom lands of the Mississippi and Illinois Rivers. This is again a remarkable instance of two nearly allied species ; one growing in the mountainous region of the Southern States, the other in the western lowlands. Analogies offer in *Baptisia alba* and *leucantha*, *Phacelia fimbriata* and *Purshii*, and others. The mountain species is distinguished from its western relative by the closer and compacter glomerules, and much more slender and mostly smaller flowers. The tube of the corolla exceeds the compact scales of the calyx considerably, and is much narrower in proportion to its length ; it gives, therefore, to the capsule which it covers a much more pointed appearance, though the capsule itself is nearly globose. This appearance of the vestiges of the corolla on the capsule distinguishes this species from *C. adpressa* just after flowering. The corolla appears to be more membranaceous than in the western species, and remains whitish when well preserved in the herbarium ; the other usually turns reddish-brown.

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as the similar but mostly broader and overlapping denticulate lobes and as the shallow campanulate tube of the corolla; filaments about as long as the oval anthers; fringed scales mostly shorter than the tube, sometimes incomplete; styles as long as or shorter than the pointed ovary; capsule conical, surrounded (not covered) by the withered corolla, mostly 1-seeded. — *C. subinclusa*, var. *abbreviata*, & *C. Californica*, var. (?) *squamigera*, Engelm. l. c. [Tr. St. L. Acad. I. 499, 500].

Saline marshes, on various Chenopodiaceous plants, especially *Salicornia:* Bay of San Francisco, *C. Wright*, Bolander, Kellogg. Also extending to British Columbia (*Lyall*), and in the interior to Arizona and southern Utah. In many respects intermediate between the preceding [*C. Californica*] and the following species [*C. subinclusa*]: but distinguished from the former by the presence of infrastamineal scales and the larger flowers; from the latter by the less crowded flowers, with shorter, more delicate, and open corolla.

From the Botanical Gazette, Vol. II. 1877.

A new Cuscuta, new at least to North America, comes now from California. A great wan- [69]
derer is this *C. corymbosa*, which nearly forty years ago stirred up the botanists of Europe, and the agriculturists not less. This interesting plant has quite a little history of its own. At the period indicated, between 1839 and 1843, an unknown *Cuscuta* made its appearance almost simultaneously in different parts of western Europe, and, singularly enough, always in Lucerne fields. In Germany it was described as *C. suaveolens*, *C. Hassiaca*, *C. diaphana*, and *Engelmannia migrans*, until Choisy, in DC. Prod., recognizing its American origin, took it for *C. corymbosa*, R. & P. In my monograph of Cuscuta, 1859, I established the identity of the immigrant with the South American *C. racemosa*, Mart., which had been introduced into Europe with the much-vaunted Chilian *Alfalfa*, in reality the old established European fodder plant, the *Lucerne*, and which proved very destructive to its nurse-plant. After ten or fifteen years the energetic measures of the farmers, together with wet and cool summers, in which the seeds did not mature, seem to have eradicated the plant entirely, and as far as I am informed, it has not been heard of again in Europe. But now, lo and behold, our wanderer makes its appearance in northern California, and, precisely as before in Europe, in Alfalfa fields, "proving very injurious." It has been, without doubt, here also imported from Chili.

Rev. E. L. Greene, who has found so many new native plants in the Shasta Valley, sends also this troublesome newcomer. How long it has been there or whether it has appeared in other parts of California, where under the well-sounding name of Alfalfa the Lucerne is frequently cultivated, is as yet unknown, nor whether it will establish itself permanently. It may be well to direct the attention of the farmers, who cultivate Alfalfa, to this dangerous enemy and to urge them to destroy any dodder which may show itself in their fields, before it can spread or mature seeds. *C. racemosa*, Mart., belongs like our common *C. Gronovii* to the section *Clistogrammica*, characterized by two styles of unequal length tipped with capitate stigmas and a not-opening (baccate) capsule. Ovary and capsule are thickened towards the apex and somewhat pointed; inflorescence loosely paniculated with longish pedicels; flowers $1\frac{1}{2}$–2 lines long, of thin texture, tube of corolla deeply campanulate, widening upwards, spreading lobes inflexed at the acute tip; scales nearly the length of the tube; capsule commonly enveloped by the corolla. The variety, *Chiliana*, Eng. Cusc. p. 505, to which this form belongs, has larger and more delicate flowers than the original Brazilian type.

The "new" *Cuscuta racemosa*, the Alfalfa-Dodder, was after all not new to Prof. Thurber [80]
and to the readers of the "American Agriculturist." By an unpardonable oversight his article in the number of December, 1874, of that journal, adorned with a cut, was overlooked not only in the notice published in the "Gazette" of January, but also in the Flora of California, published last summer. It seems that the parasite made its appearance in California at least three years ago on Luzerne fields, and its nature and dangerous character was recognized by Prof. Thurber and the means indicated to eradicate it. The little notice of this plant in the January number of the "Gazette" has elicited the information from California that the parasite is "now well naturalized, here (about San Francisco Bay), and is a great pest among the Chili clover."

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From Watson's Contributions to American Botany, XI. (Proc. Amer. Acad. Arts and Sci., Vol. XVIII. Aug. 1883.)

C. Potosina, Schaffner mss.: stems capillary; the flowers minute (scarcely a line long), short-pedicelled [124] in small, rather loose clusters; calyx-lobes triangular, acute, scarcely equalling the deeply campanulate corolla-tube, which is rather longer than its erect, ovate, acute, somewhat inflexed and at last connivent lobes; stamens short, the subglobose anthers nearly as long as the filaments; scales broad, deeply fringed, slightly exceeding the tube; capillary styles nearly as long as the depressed ovary; capsule covered by the marcescent corolla, extremely thin, easily tearing off from its base, but not circumscissile, 1-seeded. — One of the smallest-flowered species, closely allied to *C. arvensis*, from which the very fragile, 1-seeded capsule, covered by the hood-like corolla, principally distinguishes it. — Near San Luis Potosi (779 Schaffner); growing on some labiate, probably a *Scutellaria*.

C. mitræformis, Engelm.: stems thick; flowers short-pedicelled, crowded in large glomerules; calyx-lobes orbicular, unequal, the outer carinate, fully as long as the short-campanulate corolla-tube; lobes of the corolla as long as the tube, broadly oval, rounded, at last spreading or reflexed; subulate filaments as long as the linear-oblong anthers; scales very broad, deeply fringed, exsert, incurved; ovary with very short subulate styles; capsule large, exsert, 2-horned with the broad-spreading conical styles, regularly circumscissile. — Between San Luis Potosi and Tampico, in May; Dr. E. Palmer. Flowers 3 lines and capsule 4 lines long; clusters in fruit 10 to 12 lines thick. Nearly allied to *C. Xalapensis*, but distinguished by its much larger flowers and fruit, and by its short, thick, almost conical styles.

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